

**DOCTRINAL ORPHAN OR ACTIVE PARTNER? A HISTORY OF
U.S. ARMY MECHANIZED INFANTRY DOCTRINE**

A thesis presented to the faculty of the U.S. Army
Command and General Staff College in partial
fulfillment of the requirements for the
degree

**MASTER OF MILITARY ART AND SCIENCE
Military History**

by

**ROD A. COFFEY, MAJ, USA
B.F.A., Carnegie Mellon University, 1983**

**Fort Leavenworth, Kansas
2000**

Approved for public release; distribution is unlimited.

20001120 033

DIGITAL QUALITY INSPECTED &

REPORT DOCUMENTATION PAGE			Form Approved OMB No. 0704-0188
<p>Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302, and to the Office of Management and Budget, Paperwork Reduction Project (0704-0188), Washington, DC 20503.</p>			
1. AGENCY USE ONLY (Leave blank)	2. REPORT DATE	3. REPORT TYPE AND DATES COVERED	
	2 Jun 00	Master's Thesis 6 Aug 99--2 Jun 00	
4. TITLE AND SUBTITLE		5. FUNDING NUMBERS	
Doctrinal Orphan or Active Partner?: A History of U.S. Army Mechanized Infantry Doctrine			
6. AUTHOR(S)			
Major Rod A. Coffey			
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)		8. PERFORMING ORGANIZATION REPORT NUMBER	
U.S. Army Command and General Staff College ATTN: ATZL-SWD-GD 1 Reynolds Ave. Ft. Leavenworth, KS 66027-1352			
9. SPONSORING/ MONITORING AGENCY NAME(S) AND ADDRESS(ES)		10. SPONSORING/MONITORING	
11. SUPPLEMENTARY NOTES			
12a. DISTRIBUTION/AVAILABILITY STATEMENT		12b. DISTRIBUTION CODE	
Approved for public release; distribution is unlimited.		A	
13. ABSTRACT (Maximum 200 words)			
<p>An historical study of mechanized infantry doctrine. The focus is on issues encountered in the U.S. Army with the introduction of an Infantry Fighting Vehicle (IFV) in 1982. Professional reaction to IFV fielding was largely negative. By 1985 several writers claimed Bradley equipped infantry was a specialized armored infantry--and that many employment problems arose from a failure to use it correctly. This paper concludes that the notion of a specialized armored infantry is invalid. Recorded combat experience suggests that an armored infantry concept which attempts to limit mechanized infantry to narrow "tank support" roles has been invalidated by combat experience. The study examines several paradigms and concepts that have served to undermine the Army's ability to develop comprehensive combined arms tactical doctrine. By examining mechanized infantry doctrine from its earliest days to the present the study notes most failures to express an adequate role for mechanized infantry within combined arms doctrine stem from a neglect of historically based doctrinal research. The study makes a general recommendation about the role of historical study in force and doctrinal development, on faulty paradigms within combined arms doctrine, and on the roles of mechanized infantry.</p>			
14. SUBJECT TERMS		15. NUMBER OF PAGES	
Infantry-Mechanized; Doctrine-U.S. Army; Bradley Fighting Vehicle, Infantry Fighting Vehicle; Mechanized Warfare;		162	
		16. PRICE CODE	
17. SECURITY CLASSIFICATION OF REPORT	18. SECURITY CLASSIFICATION	19. SECURITY CLASSIFICATION OF ABSTRACT	20. LIMITATION OF ABSTRACT
UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED	UL

**DOCTRINAL ORPHAN OR ACTIVE PARTNER? A HISTORY OF
U.S. ARMY MECHANIZED INFANTRY DOCTRINE**

A thesis presented to the faculty of the U.S. Army
Command and General Staff College in partial
fulfillment of the requirements for the
degree

**MASTER OF MILITARY ART AND SCIENCE
Military History**

by

**ROD A. COFFEY, MAJ, USA
B.F.A., Carnegie Mellon University, 1983**

**Fort Leavenworth, Kansas
2000**

Approved for public release; distribution is unlimited.

MASTER OF MILITARY ART AND SCIENCE

THESIS APPROVAL PAGE

Name of Candidate: MAJ Rod A. Coffey

Thesis Title: Doctrinal Orphan or Active Partner? A History of United States Army Mechanized Infantry Doctrine.

Approved by:

William M. Connor
William M. Connor, M.A.

, Thesis Committee Chairman

LTC Billy J. Hadfield
LTC Billy J. Hadfield, M.B.A.

, Member

Bruce W. Menning
Bruce W. Menning, Ph.D.

, Member

Accepted this 2d day of June 2000 by:

Philip J. Brookes
Philip J. Brookes, Ph.D.

, Director, Graduate Degree
Programs

The opinions and conclusions expressed herein are those of the student and do not necessarily represent the views of the U.S. Army Command and General Staff College or any other government agency. (References to this study should include the foregoing statement)

ABSTRACT

DOCTRINAL ORPHAN OR ACTIVE PARTNER?: A BRIEF HISTORY OF MODERN U.S. ARMY MECHANIZED INFANTRY DOCTRINE by Major Rod Coffey, USA, 156 pages.

This is an historical study of mechanized infantry doctrine. It focuses on issues encountered in the U.S. Army with the introduction in 1982 of an Infantry Fighting Vehicle (IFV). Professional reaction to IFV fielding was mixed among both military and civilian observers. By 1985 several writers claimed Bradley equipped infantry was a specialized armored infantry--employment problems arose from a failure to use it correctly.

This paper concludes that a close study of military history does not correspond with an armored infantry concept which limits mechanized infantry to narrow "tank support" roles. Further, the study examines several paradigms and concepts that have served to undermine the Army's ability to develop comprehensive combined arms tactical doctrine.

By surveying mechanized infantry doctrine from its earliest days to the present, the study notes that failures to express an adequate role for mechanized infantry within combined arms doctrine stem from a neglect of historically based doctrinal research and inadequate descriptions of combined arms at the tactical level.

The study makes a general recommendation about the criticality of historical study in force and doctrinal development, emphasizes the dangers of faulty paradigms, and calls for comprehensiveness and flexibility in defining the roles of mechanized infantry.

ACKNOWLEDGMENTS

As in any project of this nature I am indebted to many individuals and there is always the danger of omitting someone. First my thanks to the staff of the Combined Arms Research Library at Fort Leavenworth. No one is more professional. Their expertise and depth of knowledge is phenomenal. Second, I will remain ever grateful to the members of my committee. Each one did more than offer excellent counsel. The conversations I had with all three members of my committee, to include topics other than the thesis topic, proved an unexpected bonus for my professional development at CGSOC.

Several individuals were unstinting with their time via no-notice telephone calls and interviews. These include, Brigadier General (Ret.) Philip Bolte, Major General (Ret.) Stan Sheridan, Dr. Charles White, Dr. Stephen Cameron, Dr. William Blair J. Haworth and Dr. Bruce Pirnie. To them I offer my sincere thanks.

I owe of course the greatest debt to my wife Holly and my sons Nathanael and Thomas. Their patience and love throughout this whole year while "Daddy was away," constitutes a sacrifice I do not deserve. Words are insufficient to adequately express what I owe them and what they mean to me.

There exists at the heart of the profession of arms a moral requirement to prepare oneself for the possibility of combat. Ultimately the reason to do a project like this is to in some way, no matter how indirect, discharge that duty. In light of that obligation I remind myself of the men of 2nd Platoon, Charlie Company, 3rd of the 14th Infantry; Support Platoon and HHC 3rd of the 14th Infantry; and Charlie Company, 1st of the 9th Cavalry (Infantry). They remain the reason I am still here.

CONTENTS

	Page
THESIS APPROVAL PAGE.....	ii
ABSTRACT.....	iii
ACKNOWLEDGMENTS.....	iv
 CHAPTER	
1. INTRODUCTION.....	1
2. MECHANIZED INFANTRY DURING WORLD WAR II.....	26
3. POST-WORLD WAR II AND THE INFANTRY FIGHTING VEHICLE.....	73
4. CONCLUSIONS.....	123
BIBLIOGRAPHY.....	146
INITIAL DISTRIBUTION LIST.....	156

CHAPTER 1

INTRODUCTION, METHODOLOGY, AND LITERATURE REVIEW

Introduction

The utility and skill of mechanized infantry formations in their dismounted role is a contentious issue in professional military literature. Debate is evident in the U.S. and many other armies. Professional soldiers and military history academics rarely speak with one voice about the dismounted infantry function within the mechanized fight. This is evident in training, proponent, and for the U.S. Army, Combat Training Center publications. Definitions and solutions are varied. Some military professionals and academics simply assume away the problem. Their opinions differ but they either suggest that vehicle firepower makes up for the lack of dismounted infantry or that developments in modern warfare render foot infantry increasingly obsolete. The latter point of view holds few professional adherents as the record of warfare since 1945 reveals continued relevance for forces fighting on foot.

However, there are a considerable number of professionals who argue that vehicle firepower makes possible a reduction in the amount of infantry within mechanized formations. The idea that the lethality of modern vehicle and aircraft based firepower renders foot action by infantry within the mechanized fight of minimal importance holds considerable sway in some circles. This study will not set out to prove that foot infantry action remains an important element of mechanized warfare. Rather it will approach the issue from a perspective which assumes that combined arms warfare has proven itself. The question then becomes, in situations in which mechanized or “heavy” forces have a role, what exactly is the role of mechanized infantry within it? This is not exclusively a

question of current doctrine. Nevertheless this thesis will examine the history of the development of mechanized infantry doctrine in the U.S. Army with a particular view to its current form, a form which is equipped with Infantry Fighting Vehicles (IFVs).

In particular this paper will seek to answer the question: is there or should there be a specialized armored infantry, distinct from standard mechanized and light infantry? This question underscores the issue of mechanized infantry's role and centers around debate over the types of infantry. These types are usually described as armored, mechanized, and light. The terms armored, mechanized and light, have very different meanings depending on their context. The meaning of these three terms has altered throughout the years not only through different eras but also through the polemical purpose of different authors. It is necessary of course to distinguish the historical uses of the terms as they relate to contemporary issues on types of infantry.

At one time Sir Basil Liddell Hart, a preeminent theorist of mechanized and modern war before World War II, used the terms "line" and "light" with the latter term indicating what the U.S. Army has since termed "mechanized." The term "armored" was first officially ascribed to forces of the U.S. Army with the establishment of a separate armor branch in 1940. At that time, the term "mechanized" was applied only to the efforts of the cavalry branch's mechanized force, though the roles envisioned made it a type of lightly armored deep reconnaissance and striking force for which there is no real modern equivalent. What today a young U.S. Army 2nd lieutenant would call mechanized infantry was represented in World War II by the armored infantry battalions within the Army's armored divisions. To display yet more confusion in the use of terminology, the contemporary use of the term light infantry is the diametrical opposite of

Liddell Hart's one time use of the term--and so it goes. What Rosetta stone can be used to decipher the terms applied to types of infantry?

In order not to obscure historical doctrinal assumptions and distinctions this paper will frequently have to use the terms as the historical writers did. There is one notable exception. When the paper is examining the World War II U.S. record, infantry forces equipped with half-tracks will be called by the name then in use--armored infantry. In later comparison and analysis in which this paper refers to World War II experience, the term used for these same formations will be mechanized infantry. The World War II armored infantry formations most closely correspond to subsequent organizations, from the late 1950s onward, that the Army has identified as "mechanized." In light of infantry types one must remember that the U.S. Army World War II armored infantry formations, by virtue of their composition and infantry-to-tank ratio, are in fact synonymous with the standard or mechanized infantry of more recent usage.

Methodology

In one sense the problems the U.S. Army has encountered with IFV-equipped infantry are in fact reducible to the issue of whether or not there should be multiple types of infantry. Analyzing these types compels one to answer questions on the role of the vehicle and squads on foot as well as the roles of mechanized infantry within the context of a combined arms fight, in particular within the context of tank-infantry cooperation. The issue of types of infantry is not a matter of either semantics or interbranch rivalry. It is instead a way of analyzing purposes and first assumptions, in other words a way of gaining clarity on the question, why even have mechanized infantry?

There are a variety of answers to this question, as well as solutions to the aforementioned question on types of infantry. Despite that variety almost every writer who addresses the question of current deficiencies in the U.S. Army mechanized infantry admits that the historical origins of the problem stem from the introduction of IFVs.

It is commonly held that the IFV era began with the Soviet introduction of the BMP-1 in 1968. The Soviet fielding of an IFV certainly grabbed the attention of Western analysts during the Cold War; however, it did not constitute the first entry into the world of the IFV.

West German concepts and developments with the Scheutzenpanzer 12-3 (Spz 12-3) in the late 1950s, marked the true entry of a radically new type of vehicle for the infantry. The Spz 12-3 had a turret with a 20-millimeter rapid-fire cannon and a 7.62-millimeter machine gun, making it a genuine infantry fighting vehicle designed to do more than simply transport infantry. Conceptually the Spz 12-3 was preceded by a 1954 French vehicle, the AMX-VCI (Vehicule de Combat d'Infanterie). Using components of the AMX-13 tank series, the VCI displayed many of the salient characteristics now associated with IFVs. It possessed a weapon mounted on the vehicle designed to participate directly in the fight. This active and deliberate role for the vehicle weapon system is a characteristic of IFVs. It is distinct from the much more cautious role described for the World War II era half-track's machine-guns.¹ Other common features of early IFVs seen in the AMX-VCI were: firing ports for infantry squad small arms; increased armored protection designed to allow the vehicle to enter into the fight prior to dismounting its squad; and even rear doors to allow the squad to dismount with less exposure, an improvement over the half-track the Spz 12-3 lacked.

The Spz 12-3 and the VCI herald the beginning of IFV development in the world's armies. With the VCI the French began integrating IFVs into their structure in 1954, followed by the West Germans a year or two later with the Spz 12-3, the Soviets by 1968, but the U.S. Army not until 1982. As can be seen by this brief fielding chronology, by way of comparison the American entry into the world of IFV-equipped mechanized infantry was extremely late. America's entry can be seen, not--as it usually is--as a belated attempt to catch up with the Soviet fielding of the BMP. Rather, as the fielding dates of the Spz 12-3 and VCI indicate, America's fielding of an IFV was up to three decades behind a more general trend in the modern development of mechanized infantry.

America was a delayed entrant into the world of IFV-equipped infantry despite her traditional forte of technological expertise. The delay, however, was not without a price. The prolonged birthing of the American IFV from 1964 to 1982 had profound implications for subsequent doctrinal confusion for U.S. mechanized infantry.

Although this study will focus on the history of the concepts that influenced incorporation of IFVs, the IFV was not created out of nothing. There is a lengthy historical context behind the development of the IFV with conceptual links dating all the way back to the Great War. A study that focused exclusively on post-World-War II events would exaggerate the differences and miss the continuities in the history of mechanized infantry doctrine. In particular, the issues surfaced in an examination of the incorporation of IFVs have deep roots in the earliest thoughts on mechanized warfare.

The development of mechanized warfare produced fertile ground for speculation on the future of warfare in the interwar years. The earliest thinkers on mechanized warfare had to speculate on the role of infantry even though it was not usually their main

concern. The problem of how, or even if, infantry would keep pace with the speed of the tank arose immediately. As a result, issues of tank-infantry coordination, the role of infantry, modified structure and doctrine for infantry, even such seemingly obscure topics as the type of vehicle and vehicle armament armies should select for the infantry, were all first addressed in the interwar years.

Even the French VCI and German Spz 12-3 had antecedents in several vehicle developments during World War II. A ubiquitous and relatively uniform line of development in mechanized infantry vehicle design is evident. This development included a desire to increase firepower and protection for the infantry squad's vehicle. The trend, viewed with an historical awareness back to World War II, appears to have been more evolutionary than revolutionary.

However, unless infantry is eventually to go the way of the saber charge in favor of increased vehicle mounted firepower, the vehicle remains an inevitably transitory aspect of the phenomenon of mechanized infantry. The vehicle's origin after all was to transport a squad of infantry in such a way that it could keep pace with the tank on the modern battlefield. At least initially there was no question that the vehicle for mechanized infantry served a purely secondary role--it assisted infantry with protection and mobility. In recent years however, doctrine writers, commanders and others have of necessity focused on the vehicle in much of their work on mechanized infantry.

This concern with the vehicle derives from many factors. These factors include the complex training requirement for a piece of sophisticated modern armored vehicle technology. They also include the specific threat situation the IFV was designed to solve --fleets of Soviet BMPs and BTRs. Additionally, focus on the vehicle derived from the

politics of coalition warfare.² For example, the issue of interoperability and compatibility with West German equipment and strategy was no small part of the drive to concentrate on the vehicle.

The doctrinal concept behind this will be discussed later, but at least some U.S. Army confusion over mechanized infantry in recent years stems from lack of doctrinal clarity on the nature and origins of the German desire to have infantry that can fight while mounted. In the field many have accepted the need for the vehicle, only to find out later they cannot escape the unpalatable doctrine that serves as its rationale. As a result, in recent years, the IFV has been alternately heralded as a revolutionary increase in firepower and mobility for the infantry and loathed as a curse.

Relevance and Literature Review

Difficulties immediately arise when one attempts to frame the doctrinal status and historical development of mechanized infantry. There is relative unanimity on the problematic nature of IFV fielding in the U.S. and other armies. As a result one would surmise the issue has continued relevance. Despite this relevance there exists no single-source examination of the history of mechanized infantry doctrine.

In the United States the IFV served as a lightning rod for defense reformers during the 1970s and 1980s.³ For this and other reasons there is some literature associated with it, but most of this is from the material acquisition and technology point of view. The IFV's influence on mechanized infantry doctrine per se has attracted relatively little study. Rather, just as the history of mechanized infantry is all but made invisible by both professional and not-so professional works on "tank" warfare, so too more recent history of the IFV's impact on mechanized infantry doctrine disappears in

the contemporary narrative on the alleged waste, mismanagement, and inappropriateness of weapons procurement programs.

This invisibility of mechanized infantry doctrine is especially regrettable because, on closer examination, the dilemma with American mechanized infantry serves as a visible fault line--almost a poster child--for larger reoccurring issues that permeate defense policy and the warfighting art. There is something to learn from the mechanized infantry story that applies to many other weapons, systems, unit types, technological drivers and doctrinal debates. Does or should technology drive doctrine, or should doctrinal thought harness technology? What is the interaction between combined arms doctrine and branch specific tactical procedures? Is the American Army historically dominated by a firepower-attrition-based as opposed to maneuver theory of warfare? Is the dichotomy between firepower and maneuver more apparent than real? Does the way in which we articulate doctrine matter almost as much as its content? What exactly is the American Army's understanding of combined arms warfare? Where is the Army's understanding of combined arms warfare articulated? Is it in Field Manual 100-5, or in branch field manuals, or unit echelon field manuals, or a combination of the above? What is the true interaction between doctrine and force development? What *should* it be? Perhaps the most important of these secondary questions for a history of this topic is how historical research and the history of doctrine is incorporated into writing doctrine and developing weapon systems.

As an embodiment of elite warrior culture, mechanized infantry stands damned from two sides. On the one hand mechanized infantry lacks the enormously effective protective armor and dominating firepower of the modern main battle tank associated

with the armor branch. On the other hand, as an exemplar of infantry toughness and skill mechanized infantry pales in comparison to both light and airborne forces, at least in the popular imagination. While these cultural perceptions of mechanized infantry are more akin to adolescent shoving matches than professional assessments of capability, the stereotypes they embody create perceptions that have unintended effects. The sad state of the Israeli Defense Force's mechanized infantry during the 1973 Arab-Israeli War is the best known example of the reality behind these stereotypes.⁴ Even these cultural perceptions of types of infantry possess current relevancy.

As of this writing the U.S. Army is grappling, as it always must, with the question of what mix of forces should comprise its main fighting and, or, main deploying force. The current Army Chief of Staff, General Eric K. Shinseki, has assessed that the U.S. Army's light forces are too light and heavy forces are too heavy.⁵ The light forces in his view lack lethality and protection, while heavy forces are both time consuming to deploy and have too heavy a logistics tail for many contingencies. Both of these observations critique the current Army force structure as not flexible enough and too tailored toward a Cold War bipolar world. In that world heavy forces deterred a Soviet invasion of Europe, and light forces managed quick strategic response mostly to impact on client state conflicts on the periphery of the main bi-polar conflict.

In truth--when viewed through the full spectrum of conflict, from peace stability or enforcement to a conventional conflict between two well-equipped modern armies--mechanized infantry provides a mix of capability that is unique and essential. It is one of the most flexible types of units on the battlefield, combining the multi-purpose ability of infantry forces with some of the protection and mobility of armored vehicles. This ability

is obscured in part by a seriously mistaken tendency in much of the historiography on armored warfare and its doctrine. Some of this historiography runs counter to the combat record. Specifically it underestimates the degree to which tanks must conduct tactical defensive actions and the degree to which infantry is a component of the tactical offensive in modern mechanized warfare.

Mechanized infantry leads a rather isolated existence amidst both combat history and the literature of military doctrine. This thesis will discuss two individuals more fully later, but British Brigadier Richard Simpkin and American academic William Blair J. Haworth, are two of the very few military writers who have attempted to deal specifically with mechanized infantry. Both comment on the lack of sources and relative obscurity of the topic.

This thesis will attempt to fill in some of the historical framework Simpkin found absent in his research, as well as alleviate some of the obscurity Haworth believes stems from the fact that mechanized infantry is a kind of orphan between two branches. To do so of course is no easy task, and, indeed, a comprehensive solution to the difficulties Haworth and Simpkin encountered would require a longer work than this. Still, a study that focuses on the history of doctrine and doctrinal influences on the U. S. Army's mechanized infantry, with an emphasis on the era of the IFV, and the still unresolved doctrinal tensions that result from the fielding of that IFV may be of some use.

As mentioned earlier the main doctrinal tension that exists in the sources is whether armored infantry equipped with IFVs is a unique type of infantry--a type of infantry with a more limited set of tasks than so-called traditional mechanized infantry--or whether IFV-equipped infantry should be capable of the full set of traditional

mechanized infantry tasks. Those who propose a distinction between armored and mechanized infantry specify different sets of tasks and functions. For these writers, represented in the literature from at least the 1920s on, armored infantry specializes in tasks and training that facilitate the forward movement of tanks. On the other hand mechanized infantry, or mechanized cavalry as the case may be, focuses on either infantry-intensive tasks, particularly the defense or seizure of prepared defenses and fortifications, or if cavalry, auxiliary independent roles that are simply echoes of the last tasks which horse cavalry attempted to retain for itself in the first forty years of the twentieth century.

Minus the vestige of the horse cavalry's old tasks, this construct for the debate on the doctrinal roles of infantry was most recently spelled out by Brigadier General (Retired) Huba Wass de Czege in an article in the U.S. Army Infantry Branch's professional journal in 1985.⁶ In the article Wass de Czege argued for three types of infantry: light, mechanized, and armored. He suggested that many of the current problems the U.S. Army Infantry faced stemmed from demanding that the light or armored types of infantry perform tasks for which only regular or mechanized infantry is best suited.

The present study claims the true confusion arises not from failure to recognize three types of infantry but from a lack of historical research on both the drivers of doctrine and the actual battlefield record of tank-infantry cooperation. In this work *drivers* are defined as any institutional force affecting an Army's force structure design. Such forces include financial constraints, desires to match competitor states, as well as social and political forces opposed to defense spending. The discussion laid out here will

contend that evidence from the historical data of tank-infantry cooperation has been undervalued in doctrinal debates and force development. In World War II, combat experience tended to compel armies to up-armor light tanks and reject slow-moving infantry tanks. Combat pushed armies in the direction of less specialization in the tank in particular and the roles for armored formations in general.

Likewise, combat experience greatly expanded the originally circumscribed roles envisioned for mechanized infantry by most early armored enthusiasts. The reason for this is critical to understand. Combined arms works on the battlefield because it puts the enemy in a dilemma. Forces that are overly specialized or confined to narrowly prescribed functions are not flexible tools for combined arms warfare. This understanding is important in an era where the Army is attempting to make its heavy forces more deployable and agile.

The Army's current force development search for greater deployability has at its root the very question of this paper--what type of infantry? The recurrence of the question in the year 2000 suggests an historical understanding of prior doctrinal debates may offer some context for current decision-makers. Certainly one does not wish to repeat mistakes of the past.

What is almost disturbing then, if disturbing is not too strong a word, is that arguments put forth on behalf of three types of infantry in the mid-1980s leave the strange combined impression of amnesia and *deja vu*. On this issue of mechanized infantry, decision-makers have been here before, the landscape seems familiar, but the signposts along the road appear as if for the first time. In regard to the history of U.S. Army mechanized infantry one might add to Santayana's celebrated quip that those who

forget history are condemned to repeat it . . . again and again and again. Hopefully the same cannot be said about current development of the interim brigade.

Sources

Sources almost never focus solely on mechanized infantry doctrine. A student of military history examining the doctrinal history of tanks and armored warfare would be awash in a sea of sources. Not so for mechanized infantry. As already mentioned British Brigadier Richard Simpkin encountered this in his work. Simpkin both before and after his retirement from active service authored several works on modern mechanized warfare on tanks, antitank systems, the relation of forces in the NATO theater and Soviet operational theory. His experience in turning to write a book on mechanized infantry in 1980 is not unlike the limitations one encounters today. Simpkin was immediately struck by the lack of authoritative material available with which to create even the barest historical framework for mechanized infantry. This lack of material, Simpkin found, stood in stark contrast to the plentiful sources available for both armor and cavalry.⁷ This is bad news for anyone attempting to write about the history of mechanized infantry. Both primary and secondary sources are hard to come by. The lack of sources however, does indicate that pursuit of the topic breaks new ground.

Again, a single-source review of the history of the development of mechanized infantry does not exist. The closest work that approximates an attempt at a survey is Simpkin's *Mechanized Infantry*. The book was published in 1980 when the American IFV, the M2 Bradley, was still not fielded, although it was by then well along in development. The work while useful, is written primarily from a European perspective. Its focus is on the issues facing NATO in their strategic standoff with a Cold War era

Soviet Union, rather than an overall study of mechanized infantry. Additionally, Simpkin's *Deep Battle* and *Race to the Swift* provide some background on both Soviet thinkers such as Isserson and Tukhachevskiy as well as the evolution of Soviet doctrine.

Simpkin is one of the few individuals who has endeavored to work directly on the subject of mechanized infantry. Even with Simpkin, such work is but an aspect of his larger concern with modern armored warfare. He noted that sources that dealt specifically with mechanized infantry training, organization and tactics were all but nonexistent.⁸ Why this is so is amply explained by William Blair J. Haworth in his doctoral dissertation on the development of the Bradley,

A large part of the difficulty of studying mechanized infantry is the subject is almost invisible to mainstream military history, falling as it does between the stools of infantry and armor. . . . Each tends to leave the infantry component of armored forces to the others. . . . Some of this obscurity is inherent in the nature of mechanized infantry, which closes off the traditional avenues of historical self-promotion. . . . Such forces do not fit well with branch oriented theory.⁹

Haworth, who has spent considerable time studying Simpkin's writings,¹⁰ provides some clarity about why the historiography of mechanized infantry doctrine is undeveloped. The above quote from Haworth also points to the characteristic of mechanized infantry that is both its source of strength in regard to battlefield utility and its source of weakness in regard to institutional political advocacy. That characteristic, and a major theme of mechanized infantry's history, is that it is inherently a modern combined arms phenomenon. While analogies to the dragoons of old may serve some romantic interest there really is no comparison between mounted infantry of old and the niche in tank-infantry cooperation and occasional independent action that mechanized infantry has performed on the post-World-War I battlefield. Mechanized infantry is in some ways a blend of two branches--Armor and Infantry. In the case of the U.S. Army

neither of these branches knows quite what to do about their usually neglected offspring. To paraphrase Haworth, mechanized infantry does not fit easily into a branch-centered approach to doctrine.

Haworth and Simpkin's aforementioned comments obviously suggest this is an area in need of further historical research. Engaging in that research makes it painfully evident that decision-makers have all too often analyzed problems associated with mechanized infantry in a veritable historical vacuum. Comments made in print in 1999 by a senior retired four-star U.S. Army General and former armor officer, sound hauntingly similar to assertions, since discredited, made by J. F. C. Fuller in the 1920s. These comments will be discussed in more detail later in the paper. For now it suffices to say combat experience since 1918 has all but invalidated these assertions as too tank pure--at best imbalanced, at worst deeply flawed--yet they remain embedded in discussions on modern warfare.

Even the seemingly unambiguous record of combat experience from World War II has its stubborn revisionists. In *Tank Warfare*, published, interestingly enough, in 1971 prior to the near disastrous redebut of pure tank method in the 1973 Arab-Israeli War, Kenneth Macksey argues that the type of integrated combined arms approach resultant from World War II was actually an impediment to a swift decision.¹¹

Any effort to comprehend the role of mechanized infantry in the combined arms battlefield requires at least some reference to J. F. C. Fuller, Liddell Hart, Guderian, Estienne, DeGaulle, Eisenhower, Chaffee, Tukhachevskiy, and those influenced by them. Having admitted the global realities of concern on mechanized warfare prior to World

War II, this study will narrow its focus on those that most influenced the United States Army's development of mechanized infantry.

As such, of the above early proponents Fuller's *Armored Warfare* and Liddell Hart's *The Remaking of Modern Armies* and *The Future of Infantry* are necessary texts to comprehend the origins of mechanized infantry doctrine. Those origins place it within a broader discussion of mechanized warfare in general.

Even with a concentration on those armored proponents who most influenced the U.S. Army a word of caution is in order. It is easy to exaggerate the influence of theorists on the more mundane and messy world of force development, doctrinal development and training. In the example of the U.S. Army in particular the greatest impetus to mechanization was not American officers reading of Fuller and Liddell Hart but the dramatic impact of German victories in both Poland and France.

Attention to historical context is necessary to fully understand any of the developments or recommendations in the history of U.S. Army mechanized infantry. For example Wass de Czege's tripartite breakdown for infantry must be seen in the shadow of U.S. Army divisional structural changes beginning in the late 1950s. The terms *mechanized infantry* and *armored infantry* do not only apply to a type of infantry. Armored and mechanized would come to describe different types of divisions. For the American Army with the development of the ROAD divisions in the early 1960s, these terms carried additional weight as types of divisions, thus further complicating the legacy of the terms. As a result some sources that describe the overall political and security policy atmosphere the Army has operated in over the years are useful.

The immediate interwar years and the years of World War II provide extremely useful data for the history of mechanized infantry structure and doctrine. British, American, German and Soviet armies provide the best sources. Numerous studies conducted during the Bradley Infantry Fighting Vehicle's development, work conducted by Virgil Ney for the now defunct Combat Developments Command based at Fort Belvoir, a review of professional journals and scattered masters and doctoral theses cover this ground. In addition the European Theater of Operations General Board has three studies that are of particular importance to this topic, No. 15 on the infantry division, No. 17 on the types of divisions for the post war Army and No. 48 on the armored division. These sources allow a student of mechanized warfare to rely less on peacetime speculation and more on review boards and policy decisions made in the midst of abundant practical experience.

Combat after action reviews are frequently not focused on the type of tactical history that is useful in analyzing a topic as distinct as mechanized infantry. Even unit level reports are often too general in their approach. Nevertheless some do exist which further bring to light the actual combat tactics, techniques and procedures of mechanized infantry employment. As Michael Doubler points out in his works, the origins of U.S. Army doctrinal adaptation in World War II tended to be decentralized and entrepreneurial. Doubler's *Closing with the Enemy* is a rarity in that it actually focuses in a deliberate way on the combined arms technique used in World War II. Those techniques as well as the General Board reports provide an illuminating legacy that is too often ignored or left uncovered in modern doctrinal debate.

After World War II large mechanized conventional battles did not take place until the Arab-Israeli War of 1973, also known as the Yom Kippur War. Before 1973 the structural and doctrinal modifications in mechanized infantry have to be traced in developments within the armored forces of the Cold War adversaries. German, American and Soviet developments are significant. Harriet and William Scott's, *The Soviet Art of War: Doctrine Strategy and Tactics*, though it takes a hardline approach on Soviet strength and intentions, is useful for the non-Russian speaker in that it contains primary source doctrinal discussions. For our purposes it includes an illuminating translation of an article on "The BMP in Combat."

The Soviet Army in the Cold War pre-IFV era did not remain firmly rooted in its experiences of World War II. While some of the postwar discontinuity is attributable to political factors, much also stemmed from Soviet reflections on the use of battlefield nuclear devices. Regrettably, researchers are not rushing to Soviet archives in order to research or translate doctrinal debates from this era. The Scotts' work will have to suffice for providing a window into Soviet doctrine. However future research will hopefully uncover more details of Soviet doctrine in this area.

In a development similar in some ways to the impact of the arrival of the tank, the advent of nuclear capability caused a sometime confusing need not only to justify infantry formations doctrinally, but also to articulate the role of ground forces in general. Maxwell Taylor's *Uncertain Trumpet* is anything but uncertain in its plea for a more balanced approach to defense policy in the nuclear era. Leavenworth Paper No. 1, "The Evolution of US Army Tactical Doctrine," is a good summary of this era as well. The novelty of nuclear and airpower created a dominance in thinking on future warfare which

still casts a shadow on U.S. military thinking even if the form of that shadow has changed. Further, the possibility of a radiologically contaminated battlefield drove vehicle design in directions that more or less unintentionally altered the capabilities of mechanized infantry.

Two events, one political and another doctrinal are significant watersheds in the history of mechanized infantry doctrine. The political event is the 1973 Arab-Israeli War. This conflict served as a catalyst for change, or at least refinement, in most of the world's Cold War armies as they struggled to learn its purported lessons. Several studies are available for this era.

The doctrinal event is the efforts made by the Army to both turn away from Vietnam and incorporate lessons learned from the 1973 war. These efforts resulted in the 1976 version of FM 100-5. Critical to understanding the impact of the 1973 war on the U.S. Army is comprehending the lessons learned approach taken by the first Training and Doctrine Command (TRADOC) commander, General William E. DePuy. Paul Herbert's, Leavenworth Paper No. 16 *Deciding What Has to Be Done: General William E. DePuy and the 1976 edition of FM 100-5, Operations* is perhaps the definitive work in explaining how immediate post-Vietnam doctrinal change came about. DePuy's selected papers and oral history provide necessary context and lead to germane issues, such as squad-carrying capacity of the Bradley as well as the perennial firepower-versus-maneuver debate. DePuy's own writings are particularly significant in understanding how dismounted maneuver became devalued as post-Vietnam Army engaged in a strongly weapons-centered focus in tactics.

To put the 1973-1995 era in context the works of John L. Romjue, the long-time command historian at TRADOC, are vital. Romjue provides additional support for many of the interpretations in Herbert's work. Assessments of DePuy's impact on mechanized infantry development are incomprehensible without an understanding of the historical context in which he had to operate. The study will examine DePuy's influence and thought primarily as evidenced by several available collections of his published correspondence, memoranda, and briefings.

This study will also need to place itself within the context of the broader debate among historians of the American military and its doctrine. This debate is among those who claim to see within the U. S. Army's method of operation a preference for firepower and attritional warfare rather than maneuver warfare. This does present some challenges of interpretation as writers and practitioners in the so-called firepower and attrition side never describe themselves as such. In particular the thesis cannot explore the degree to which a firepower-based method might match American technological or cultural preferences. William Lind, one-time advisor to presidential hopeful Senator Gary Hart, is one of the more forceful critics of U.S. Army doctrine and culture. His numerous articles and essays are representative background to the firepower-maneuver debate, while *Pentagon Wars* by James G. Burton, while it tends to the polemical, describes much of the technology and force development debate at the time of the Bradley's fielding.

The early development of the Bradley is critical to the study. William Haworth's aforementioned dissertation is invaluable as a comprehensive review of the development of the Bradley. The work is on less certain ground when discussing the subsequent

difficulties encountered in doctrinal debates on the Bradley. Haworth supports the legitimacy of a specialized armored infantry but dismisses too easily the complaints from the field on insufficient numbers of dismounts. For Haworth a concern for dismounted action represents the dying embers of standardization mania he believes is endemic on the part of the Infantry branch. Haworth fails to adequately explore the specifics of the combined arms historical record of tank-infantry action as well as the deficiencies discovered during field exercises in regard to the role of mechanized infantry when the Bradley was first fielded. Nevertheless, the work is essential for anyone interested in understanding the history of American IFV development or American mechanized infantry. Further, Haworth can be excused for failing to recognize the outlines of an issue that the military failed to make explicit--with the introduction of the IFV what if any is the enduring unique contribution of foot infantry within the mechanized fight? Haworth's ready acceptance of the notion that firepower validly replaced much of the requirement for dismounted action is hardly without support. Indeed, what you are reading now is representative of a minority, possibly even revisionist, view on the subject as far as written materials go.

Telephone interviews with Haworth, command historians at both Fort Knox's Armor school and Fort Benning's infantry school and two of the former program managers--Major General (Retired) Stan Sheridan and Brigadier General (Retired) Philip Bolté invaluable. Bolté in particular continued to publish on related weapons development issues after his retirement.

Heinz Guderian's postwar *Panzer Leader*, Mellenthin's post war *Panzer Battles* and Manstein's postwar *Lost Victories* are invaluable as example of wartime experience

and thinking. The research will have to use other sources to examine German prewar thought. Bryan Perret's *A History of Blitzkrieg*, Charles Messenger's *The Blitzkrieg Story*, and Trevor N. DuPuy's *A Genius for War*¹² contain sections dealing with this. Typescripts and translations of German prewar articles are valuable for examining primary sources on this topic. Larry Addington's *The Blitzkrieg Era and the German Staff, 1865-1941* helps establish some of the background of German thinking on mechanization. Postwar studies, often done with the cooperation of the defeated German generals are fairly numerous. Captured documents are also numerous and material on German tables of organization and doctrine is available.

The postwar studies on what the Germans thought of their mechanized infantry or panzergrenadier experiences are not without their problems. Continued scholarship in recent years has unearthed the degree to which Liddell Hart's influence and Guderian's role in the development of mechanized warfare has been exaggerated. A specific distortion occurs with Liddell Hart's reliance on the talkative and in fact not well informed General Wilhelm Ritter von Thoma, on the topic of German preferences on the amount of infantry in panzer divisions. Samuel J. Lewis' *Forgotten Legions: German Army Infantry Policy 1918-1941*, and James Corum's *The Roots of Blitzkrieg: Hans von Seeckt and German Military Reform* serve as invaluable updates on opinions and conclusions drawn in the first forty years of the historiography of German World War II mechanized warfare.

Several key authors whose works on infantry in particular or combined arms warfare in general provide mandatory frames of reference. As to infantry in particular, the works of John English, especially *On Infantry*, provide some critical thinking related

to research questions of the thesis. Whether or not infantry has an irreplaceable role on the battlefield is but one issue English explores. Regrettably, English does not extensively explore mechanized infantry doctrine. For the broader context of overall mechanized infantry doctrine a doctoral dissertation by Paul Albert Dyster *In The Wake of the Tank: The 20th Century Evolution of the Theory of Armored Warfare* approaches issues of modern mechanized war similar to the intent of this thesis--as a history of ideas. A School of Advanced Military Studies (SAMS) monograph by then Major (now Lieutenant Colonel) Edward Gibbons *Why Johnny Can't Dismount: The Decline of America's Mechanized Infantry Force* contains valuable insights on the connections between mechanized infantry performance and combined arms warfare. A SAMS master's thesis¹³ by then Major (now Major General) Robert St. Onge, *The Combined Arms Role of Armored Infantry*, affords a developed understanding of armored vice mechanized infantry. St. Onge's thesis provides a more thorough and less overly-specialized justification for a unique armored infantry than Wass de Czege was able to provide in the space limitations of his article on three types of infantry in *Infantry* magazine. Of course the 1986 and 1989 white papers on the Bradley and Bradley platoon organization are critical to the fielded history of the American IFV and the difficulties commanders and their soldiers encountered.

As to the development of ideas on the employment of mechanized infantry *The Cavalry Journal*, *Infantry*, and *Armor* magazines, to include their predecessors, all reflect the march of ideas on this subject. Articles in these magazines betray instantly the concerns of the day and provide a valuable window, untainted by hindsight, in regard to both official pronouncements and unofficial speculation. In fact command historians at

both the Armor and Infantry schools have recommended these service journals as the best means by which to determine what members of the branch thought about the role of mechanized infantry in a given historical period.

There are in short enough sources to allow us to turn to a consideration of the many issues revealed in a study of the history of mechanized infantry doctrine. Chapter Two will analyze prewar speculation, field exercises and World War II combat lessons learned on mechanized infantry doctrine. Chapter 3 will discuss the history of U.S. Army mechanized infantry doctrine down to the present. Chapter 4 will then analyze the drivers, recurring themes and open issues in U.S. Army IFV--equipped mechanized infantry doctrine. While elaborating on secondary questions, Chapter 4 will answer the primary question of the thesis, is IFV-equipped mechanized infantry a valid unique infantry type with roles more specialized than traditional mechanized infantry?

Caught between two branches mechanized infantry is in its own way twice orphaned. Yet it has met with considerable success on the world's battlefields. With the introduction of the IFV it seems threatened with a potential third orphaning. The history of both its use in battle and the doctrinal ideas that have sprung up around it point the way to a rediscovery of its parentage.

¹ See Office of the Chief of Field Forces, FM 17-30, 10 November 1944 "The Armored Infantry Battalion," (Fort Monroe, VA: United States War Department, 10 November 1944), 1.

² The desire to match the doctrine and capability of the Bundeswehr was significant for the U.S. military. For the desire to match the doctrine see Paul H. Herbert, Leavenworth Papers Number 16 *Deciding What Has to Be Done: General William E. DePuy and the 1976 Edition of FM 100-5, Operations*, (Leavenworth, KS: Combat Studies Institute, United States Army Command and General Staff College, 1988). For an example of attempting to mirror supposed Bundeswehr capabilities see, Maj. Lowell A. Aiken, "The Panzergrenadiers Roll Again," *Army*, February 1964, 39.

³ Newspaper and magazine articles attacking the Bradley were plentiful in the mid-1980s, a common example see Fred Reed and Walter Andrews, *Washington Times*, 14 November 1985, 22.

⁴ Jonathan House, *Toward Combined Arms Warfare: A Survey of 20th-Century Tactics, Doctrine and Organization* (Fort Leavenworth, KS: Combat Studies Institute, U.S. Army Command and General Staff College, 1984), 178.

⁵ For a good example of how this view has led to further discussion see William L. Stearman, "Medium-Weight Brigade: Army's Part of Joint Force," *Army Times*, 60 No. 19, 6 December 1999, 24.

⁶ Huba Wass de Czege, "Three Types of Infantry," *Infantry*, July-August 1985, 11-13.

⁷ Richard Simpkin, *Mechanized Infantry* (Oxford and New York: Brassey's Publishers Limited, 1980), 4.

⁸ Ibid.

⁹ William Blair J. Haworth, "The Bradley and How It Got That Way: Mechanized Infantry Organization and Equipment in the United States Army" (Diss., Ann Arbor, MI: UMI Dissertation Services, 1995) 1-2.

¹⁰ Dr. William Blair J. Haworth, phone interview with the author, December 28, 1999, Falls Church, VA.

¹¹ Kenneth Macksey, *Tank Warfare: A History of Tanks in Battle*, (New York: Stein and Day Publishers, 1972), 245.

¹² As in any writing, which mentions both men, it is necessary to make the distinction between the retired Colonel and historian Trevor N. DuPuy and the four-star General and first TRADOC commander William E. DePuy. Only DePuy figures prominently in this study.

¹³ When St. Onge attended SAMS students wrote a thesis not a monograph. Therefore it will not come up on a list of SAMS monographs even though St. Onge wrote it as a SAMS student.

CHAPTER 2

A BASE OF EXPERIENCE: MECHANIZED INFANTRY DOCTRINE DURING WORLD WAR II

Fuller and Liddell Hart

To begin at the beginning is to contend with the legacy, writing, advocacy, and in some instances self-defeating combativeness of Major General J. F. C. Fuller and Sir Basil Liddell Hart. The saga of Fuller and Liddell Hart and of their status as the most influential published theorists on mechanized warfare between the two world wars is well known. This thesis will discuss first Fuller then Liddell Hart.

There is reason to believe that in private Fuller was more balanced in his advocacy of the tank than he was in public. In his writings and public statements, however, the assessment of most historians is that Fuller is guilty of exaggerating the performance of tanks in the Great War¹ and mischaracterizing their future potential. Fuller failed to perceive that effective employment of tanks would occur in the context of a combined arms team.

He spoke of tanks and types of tanks by drawing an analogy with naval warfare, going so far as to speak of “destroyer” and “battle” tanks which he envisioned as patrolling the battlefield like so many opposing fleets on the open seas.² This analogy immediately reveals its own flaws and the flaws in Fuller’s conception. The comparison within the analogy between the naval and land environment requires belief that two combat environments that are remarkably unlike are in fact similar in significant ways. Fuller of course was focused on the weapons, not on where the weapons were fighting, nevertheless the analogy he uses speaks volumes about the reasons he gives predominance to one arm. The vegetation, contours, man-made structures, rivers,

swamps, mountains, ridges--the variegated structure of the land environment--are substantially unlike the ocean despite the fact that naval forces experience the ocean as a varied and not entirely flat environment. While it is true that the proximity of land masses, storms at sea, depth of the sea floor and even tides and currents impact on naval war, from the perspective of observation of the enemy and the environment's impact the sea environment is not as variegated as that of land. Further, actual warfare at sea includes air, surface and subsurface components. Fuller, however, was not envisioning it as variegated but making a comparison solely to naval surface warfare.

The land environment possesses a denser array of obstacles to both movement and observation than does surface warfare at sea. Fuller's notion of the decisiveness of the tank operating alone could be sound only in a fantasy world in which land warfare took place in an essentially terrain-less environment. Fuller's concept was flawed in its lack of connection to other aspects of warfare than its own subject. In his early works even Liddell Hart shared the exaggerations inherent in Fuller's view going so far as to state tank armies would "swallow" the traditional arms of the service.³

The similarities of Fuller's view on tanks to other post-world War I proponents of new systems such as Italian air theorist Giulio Douhet⁴ and airpower is compelling. What theorists like Douhet and Fuller have in common is the advocacy of a single decisive arm around which all other efforts should be arranged as purely secondary. Their approach is almost exclusively weapons-system-oriented in its description of military power and effects on the battlefield. Their views stand in stark contrast to a developed understanding of combined arms warfare. They further represent a trend in post-world War I Western military thinking. This trend is to view a single weapon

system as decisive. It reveals much about Western obsessions with technological and quantifiable solutions to problems. Having manipulated our environment so successfully in the realm of physical science the tendency is to resort to similar procedures in all other areas of human endeavor. But if the history of war in the twentieth century has demonstrated anything, it is that war is sufficiently complex that it does not lend itself readily to solely technological solutions. The arrangement of and human interface with those technologies are as important as new and better equipment. The almost instinctive belief that we can create a technological “silver bullet” to solve the challenges of the battlefield is a popular western notion.

Regardless of deficiencies in Fuller’s pure tank ideas, he was more correct than many of his opponents in much of his speculation on future war. On issues of the significance of mechanization, the rise of airpower, and the potential for increased tempo afforded by these developments, Fuller saw far more clearly than many of his contemporaries. At the same time, numerous of Fuller’s contemporaries understood the importance mechanization was sure to have in future war while also retaining a more accurate and less polemical awareness of the outlines of modern combat.

Fuller rose to general officer rank in his own Army and had influence in many others. He was a prolific writer and lived until 1966. Despite the opportunity he had during his long life to reassess his position on the role of mechanized infantry, he failed to substantially do so. In 1943, in part through the prompting of America historian S. L. A. Marshall, Fuller’s celebrated Field Service Regulation lectures were republished in America under the title *Armored Warfare*. Fuller had published the original work in 1932.

Fuller bracketed the 1943 version with comments he could add with the benefit of observation of World War II. A short review of these comments and Fuller's conceptions on modern infantry reveal just how unwilling he was to adjust his views even when the historical combat record challenged his theories. Fuller had always admitted that light infantry formations would be necessary for combat in forests and mountains. Additionally he had transmuted ideas of auxiliary militia into a concept he called motorized guerillas. He further saw the need for another type of infantry. This type was "normal" infantry, it was all that was left of traditional infantry and all it was good for was occupying conquered territory.⁵ None of these types; the light infantry, the motorized guerrillas, or the normal infantry of Fuller's theory are accurate descriptions of the reality of infantry fighting with tanks in World War II. Fuller made only one small concession to the realities the World War II's mechanized combined arms teams set before him. Faced with the degree to which World War II armies integrated infantry into their armored forces Fuller hung to his ideology by claiming such infantry forces were not infantry at all but rather "antitank foot."⁶

Fuller went so far as to postulate how tank-pure forces can clear rugged mountainous defiles through a combined use of heavy and light tanks, the latter of which he presumed to be more maneuverable.⁷ Fuller envisioned these lighter tanks negotiating difficult guerrilla infested terrain by themselves and with impunity. In J. F. C. Fuller one sees an influential proponent of mechanized warfare with an almost absurd blind spot in relation to the role of mechanized infantry. Possibly Fuller had invested too much emotional capital in doing his part to ensure the tactics of World War I were never repeated. Pointing out that Fuller was attempting to fight his way through some highly

obstructionist thinking is beside the point. Others successfully fought the same fight while remaining open to the possibilities of combined arms theory. For Fuller the notion that the infantry might remain a major participant in ground fighting was synonymous with lack of maneuver, indecision, and poor generalship.

Fuller's ideas and influence demonstrate that at least some of the intellectual environment in which mechanized infantry was born was hardly conducive to a healthy childhood. Mechanized infantry's place within interwar theorizing on mechanized warfare was akin to the lot of the proverbial red-headed step child. Fuller ultimately retired as a major general making any claim that he suffered for his views difficult to maintain. If he did have enemies, he certainly had just as many friends, or at least superiors who acquiesced in his continued promotion. While reaction to his views was certainly mixed, the overall success of his career suggests those views elicited some respect from his peers.

Some of Liddell Hart's earliest pronouncements on infantry were not entirely unlike Fuller's. Indeed Liddell Hart made one early suggestion in 1927 that the future infantryman would move about the battlefield in his own personal minitank.⁸ Nor was Liddell Hart uninfluenced by Fuller's naval analogy. As he continued to consider mechanization in the 1920s and 1930s, Liddell Hart appropriated Fuller's term "landmarines" for a type of infantry that would focus exclusively on fighting to clear obstructions to the forward momentum of tanks. Unlike Fuller, Liddell Hart engaged upon a thorough examination of the future role and utilization of infantry which did not so readily dismiss the function of foot or dismounted maneuver on the battlefield.

Liddell Hart had made a name for himself immediately after the war by articles on infantry tactics and assisting in the rewrite of the infantry training manual in 1920.⁹ In this manual his famous idea of “expanding torrent” is already evident. He expanded his ideas in later publications, especially *The Remaking of Modern Armies* and *The Future of Infantry*. These volumes contain what is, in effect, the conceptual framework for post-World War I infantry. In this work Liddell Hart was clearly influenced by, but did not produce a carbon copy of, German World War I *strossstruppen* tactics.¹⁰

General developments taking place within the British Army underscored the need for a new type of infantry. Liddell Hart posited an infantry force that would be flexible enough to exploit success at the tactical level regardless of where it occurs. He called for greater delegation of authority for infantry elements to maneuver at lower and lower echelons. While weapons improvements were certainly important, Liddell Hart pointed out that modern infantry protected itself with greater dispersion, flexibility and maneuverability at lower levels.

Indeed it could be argued that the entire history of successful modern infantry is the creation of more and more articulation and maneuverability at lower levels. This has ultimately resulted in the concept of the infantry squad as the lowest echelon capable of independent maneuver, a concept Liddell Hart pointed toward but did not explicitly advocate.¹¹ The historical development of this squad has certain clear characteristics which it is important to examine to place the development of mechanized infantry in context.

Twentieth-century infantry development reveals a squad with the ability to suppress with one element while assaulting or closing the range to the enemy with

another. To do so in the most flexible manner it has developed to the point where each element, or more properly team, possesses both the leadership and suppressive weapon capability to interchangeably fulfill the role of suppression or assault. Liddell Hart did not prognosticate on the exact composition of the squad with any great degree of prophetic accuracy. He was, however, startlingly accurate in regard to the concept of what foot infantry should do and how it should do it on an increasingly lethal battlefield. Liddell Hart, far more interested in infantry tactics than Fuller, actually suggests that the "land marines" that will accompany tanks are essential to placing an enemy in a dilemma wherein the two arms--tanks and infantry--cooperate to such an extent that the enemy, "in parrying one exposes himself to the other."¹²

By the time of the British Salisbury Plain Trials in 1927, an event the U.S. Secretary of War witnessed, Fuller's and Liddell Hart's notions were competing models for the future of infantry in general. The idea that there should be a mechanized infantry and the degree to which such infantry should be integrated with tanks was still very much an open question. Observers tended to conclude from the trials that even motorized (wheeled) infantry would slow down the tank force.¹³ Liddell Hart however continued to argue for a full mechanization of infantry and continued to be interested in its relevance to offensive action.¹⁴

In both Great Britain and the United States, concepts associated with the traditional role of cavalry tended to attach themselves to speculation on the future of armor. In this relationship one sees the genesis of the notion that tanks should be preserved exclusively for purposes of exploitation of an already disrupted or broken enemy. As Richard Ogorkiewicz has pointed out early armored development tended to

run firmly along the lines of traditional "horse" and "foot" roles. Interwar armies developed some tanks for exploitation. Other tanks were developed along the lines of mobile pillboxes to add support to what remained an infantry-centric attack. Ogorkiewicz points out that neither view allowed for optimal use of the tank, mechanization, or combined arms.¹⁵ In these two notions of the use of the tank--all-tank (cavalry) on the one hand and infantry support on the other--not only was the potential of the tank not optimized, the need for mechanized infantry was all but submerged.

Imagining tanks as the modern inheritors of cavalry shock action, in Fuller's manner, worked against the optimal use of the tank. That optimal use was realized in a combined arms team. We shall see in the discussion on World War II that what seemed at first blush as bold decisive maneuver--attacking the rear and flanks of enemy formations--became in fact a seriously limiting tension in the application of a mechanized combined arms force. It worked against it, in practice, to the extent that it in fact limited the tank to maneuvering against the flank and rear of enemy formations or conducting raids more or less in a solo act uncombined with other arms. The desire to mass tanks proved valid. But early proponents had a tendency to greatly exaggerate what tanks alone could accomplish. Tanks to be effective needed to be massed along with other armored and mechanized formations that is, in a combined arms team. This combination did not appear immediately as an option to many early theorists. In their eyes the infantry component in particular was discredited on two accounts. The first is that it only moved at a speed of 2 1/2 miles per hour. The second is that it was allied to the old ways of World War I Western Front ineffective mass, and was actually more costly both financially and politically due the larger personnel base.

Indicative of the “infantry as burden” viewpoint in the U.S. Army is the work of Colonel James K. Parsons who in 1929 was Commandant of the tank school at Fort Meade Maryland. Charged by the Secretary of War for field development of the mechanized force, Parsons submitted a report through the Army’s Adjutant General in 1930. In it one sees for perhaps for the first time in the U.S. Army an official report that spells out infantry’s flaw of moving at a mere 2 1/2 miles per hour. A chart provided in the report is also revealing in the care it takes to demonstrate that, while an effective tank division could consist of only 8,119 personnel an infantry division of the time comprised 21,175. We will see that not only combat experience but even pre-World War II field exercises would contribute to both a decrease in infantry division size (for the sake of mobility) and an inclusion of more infantry into armored division establishments.¹⁶

Parson’s report reveals another tendency and that is to argue in favor of mechanization as a means of fulfilling national security needs at less cost than a mass Army based on infantry formations.¹⁷ This view of course owed much to a reaction to the failure of the tactical offensive and the association of an infantry based Army with those failures on World War I’s Western Front. The fact that infantry itself was undergoing revolutionary change--consisting of greater dispersion; greater firepower lethality and weapons mix at lower echelons; as well as an increased tendency for bankrolling initiative--was not uppermost in the mind of many early tank theorists. Indeed for many the famous French dictum, “artillery conquers, infantry occupies,” served as a reminder of infantry’s apparent diminished status to a largely auxiliary arm—an arm that would not be a major player in the main fight. It seemed as if the speed of action afforded by mechanization could not be utilized if infantry tried to, in effect, come

along for the ride. This limitation of course did have a solution--provide the infantry with a carrier vehicle that could keep pace with the tank. Both Fuller and Liddell Hart hit upon the solution but the differences in their overall approaches have had enduring influence down to the present day.

Attempting to discern the degree to which early figures in U.S. Army armor development were influenced by Fuller and Liddell Hart is fraught with difficulty. In interviews for a masters thesis written in 1968 Timothy K. Nenninger contacted many senior armor officers with combat experience in World War II. Most did claim that they had read both Fuller and Liddell Hart. Despite this, in the development of American mechanized formations, actual field exercises seem to have had the greatest impact on a gradual expansion of the role of mechanized infantry. One early exercise conducted within the cavalry branch pitted mechanized forces and horse cavalry against one another. A successful night attack by the horse cavalry force led the participants to conclude that mechanized cavalry at least needed sufficient infantry to protect the tanks at night.¹⁸

In just such incremental ways did field exercises contribute to a home-grown slowly emerging view that the optimal use of modern technology was the establishment of a mechanized all-arms force. The solidification of this view would receive its greatest impetus from early German successes in World War II.

The Germans

The interwar German Army benefited by being heir to both the professional detachment of the German General Staff and the rigorous focus on efficiency of the Weimar Army.¹⁹ The combination of these factors made the German military as a whole

open to the radical possibilities of both mechanized and air forces in the interwar period. A specific product of these influences (pragmatic approach to analysis and professional rigor), was a relatively balanced armor force.

Even with the relative balance achieved in German pre-1939 armored force structure the first force structure change made by the Germans as a result of their 1939 September-October campaign in Poland was to increase the infantry component of their panzer arm. As in most armies the German structure was not entirely uniform. Nor was the reason for structural change entirely a result of modifications to doctrine based on combat experience. Nevertheless while most German panzer divisions during the Polish campaign consisted of four panzer, three motorized infantry and two artillery battalions, after the campaign they were reduced to three panzer battalions.²⁰ This was a continuing trend and despite the fact that it was in part motivated by Hitler's mandate to create more panzer divisions (without a proportional increase in tank production), it nevertheless was consistent with lessons drawn by all sides.

Reflecting on their combat experience the Germans added even more infantry to the structure of their panzer divisions. An analysis of why they did this indicates that numerous combat missions within mechanized operations required many infantry-intensive tasks. The Germans were not able to achieve breakthroughs, contain enveloped enemy forces, or capitalize fully on their capacity to break into the operational depth of the enemy without possessing a large density of infantry formations. By the time of Operation Typhoon, the German drive on Moscow beginning in late September 1941, Panzer generals were pleading to incorporate even foot-bound infantry into their Panzer Corps and Armies. Based on their recent experience in the summer 1941 battles, where

they were able to surround but not always adequately contain large masses of Russian troops, the armor officers were willing to work with the slower pace of the non-motorized divisions rather than not have enough infantry.²¹

The idea that German operational and tactical success in World War II came largely from their ability to exploit the potential of one weapon system, the tank, is a relatively common misconception. German success came markedly from the fact that they possessed the willingness to exploit mechanization, lower level leadership initiative, and tactical airpower. Otherwise knowledgeable students and competent historians of this era, particularly those whose interest lies outside tactical doctrine, are prone to speak of World War II mechanized operations as exclusively a matter of “tank” warfare.

One example is Carlo D’Este, the most recent biographer of General George S. Patton. D’Este is undeniably a very competent historian and also a retired U.S. Army lieutenant colonel. However, D’Este’s main attempt to summarize Patton’s legacy as a military practitioner-innovator speaks of “tank victories” and offers as evidence of the enduring nature of such victories both Desert Storm and the Arab-Israeli Wars.²² D’Este’s characterization is probably shorthand, and it is somewhat unfair to cite this shorthand as his representative summary of modern mechanized warfare. That said, it is significant that D’Este attempts to summarize mechanized warfare by terming it “tank victories.” This characterization strongly implies that in modern warfare there exists one solitary decisive weapon around which all other weapons and arms should be arranged in order to achieve success. On inquiry D’Este, a man eminently knowledgeable about World War II, might modify his comments and provide a more detailed discussion of combined arms. It is, however, both revealing and somewhat typical that mechanized

warfare is described as tank-focused. It is a central contention of this study that not only has successful mechanized war not been as tank focused as commonplace conventional descriptions might suggest, but that the language frequently used to describe mechanized warfare has served to unwittingly undermine the U.S. Army's ability to profitably describe combined arms warfare.

The point is not that tanks are not vital to mechanized warfare. The point is that viewing the tank as a decisive weapon that must simply be supported properly in order for all to go well in modern mechanized warfare is both unsophisticated and belied by the historical record. A mechanized combined arms team in which airpower plays a vital role has been the tactically optimal mix of forces in the modern mechanized fight. Even at their most accurate, theories on warfare are of course not the same as the lessons learned from actual warfighting. Many armies in the press of continued combat adapt their tactics, strive to learn from mistakes and possess a freedom to experiment that they are not normally allowed.

As a result it is useful to examine the combat record as it was recorded at the time, rather than from subsequent reflections the focus of which is not tactical combat. For the U.S. Army a central locus of this combat record for mechanized infantry remains World War II. Although it is possible to wade through specific unit and battle histories an amazing number of them do not provide the kind of detailed tactical history one needs for an examination of how mechanized infantry was employed. Fortunately the Army held numerous boards at the end of World War II that, among other questions, made a conscious attempt to capture just these issues for posterity. One such project, the European Theater of Operation's (ETO's) General Board Reports will serve as a data

point. This report contributes a record of how experienced soldiers in the largest historical example of mechanized infantry use (World War II) actually fought a live thinking enemy.

Brigadier General Joseph A. Holly served as the head of the Armored Section for the European Theater of Operation's General Board report on the Armored Division. Holly had been part of a growing group of prewar Cavalry officers at the forefront of mechanization efforts in the U.S. Army.²³ In the 1945 board report he was assisted primarily by five colonels and one lieutenant colonel--all of them Armor officers. Holly's group of seven Armor officers constituted the Armored Section, General Board. Because they were making recommendations for the structure and composition of the entire armored division they were assisted by eleven other officers from the various branches present in a division structure. These branches were diverse, including military police, signal, field artillery, and so on. The board report lists these latter officers as "consultants" on the page after the table of contents. One officer's branch is not listed, "G-3 Section," appears after his name. These consulting officers seem to have been present simply to assist the Armor officers on issues in which other than Armor branch expertise might be necessary. Considering the fact that the board section itself was composed exclusively of seven Armor officers the outlook of its members could not have been effected by any pro-Infantry branch parochialism.²⁴

The Armored Section's report consists of an account of missions performed by armored divisions in the ETO; a narrative listing of actual combat formations used by armored divisions; historical examples of employment of armored divisions; and a brief summary of "opinions" about the armored division. These foregoing sections constituted

the Armored Section's report. Four colonels and the lieutenant colonel of the section then attended the further discussion of the report with a larger and higher ranking panel of the General Board. This larger panel met on 7 November 1945 chaired by Lieutenant General Geoffrey Keyes who at that time commanded U.S. Seventh Army. Keyes, like Holly, had prewar experience with attempts to mechanize the U.S. Army. Members of this larger panel included three major generals, three brigadier generals, seven colonels and a lieutenant colonel, for a total of fifteen officers. The majority of these officers had fought in armored divisions during the war. This larger panel added a succinct one page list of further recommendations and essentially approved and forwarded the opinions of the Armored Section. In summary--the entire report was primarily the effort of a core group known as the "Armored Section, General Board" whose opinions were then discussed and forwarded with brief additional comment and preparatory guidance.

This somewhat tedious explanation of the membership and operation of the board is necessary to establish that the report was overwhelmingly the product of the efforts of Armor officers. The report constituted a definitive effort on the part of senior Armor branch officers with combat experience in armored divisions in the ETO to capture their experiences and record their judgments to assist the Army in the future.

The content of this report would surely be startling from the perspective of any one who might view mechanized warfare as primarily an exercise in "tank victories." What is revealed in this report is not that success in the ETO was constituted by "infantry" victories either, but that close, intimate cooperation of a mechanized tank-infantry-artillery-team constituted the essence of effective modern mechanized warfare at the tactical level. The report further displayed that a tank-infantry mix wherein battalion

ratios of infantry to tanks of at least 1 to 1 and frequently greater than that predominated in the ETO.

In the section on actual combat formations the Board Report covers the two different Tables of Organization and Equipment (TOE) for U.S. armored divisions in World War II. This consisted of a so-called heavy and a light armored division TOE. The heavy and light designation was a reference to the number of personnel and units, not the types of tanks, in the division. This World War II U.S. armored division heavy and light structure is a fairly ubiquitous term in the literature of the period. However, it is also somewhat slang in nature, as the heavy structure is more properly known as the 1942 Armored Division TOE and the light as the 1943 TOE. This paper will continue to use the terms heavy and light because of their frequent use in the literature. The heavy TOE had been the structure the U.S. ostensibly entered World War II with in combat in North Africa in 1942. The lighter TOE came about as the Army attempted to learn from German and British organizational changes in the aftermath of combat experiences in the first couple years of World War II. However, as we have already seen, prewar exercises conducted within the Cavalry and later the Armored Corps seem to have provided the initial impetus for increasing the integration of more infantry and artillery into tank formations. This concern to learn from actual combat experience and the legacy of prewar exercises dove tailed nicely with Army Ground Forces head Lieutenant General Leslie McNair's desire to streamline combat formations. McNair felt this streamlining was essential to ensure a good tooth-to-tail ratio and increased maneuverability and agility over prewar divisional structures.²⁵

Only two armored divisions, the 2nd and the 3rd, remained organized under the heavy division 1942 TOE. These divisions contained six battalions of tanks and three of armored infantry. The light, or 1943 TOE, under which the remaining 14 ETO armored divisions were organized, possessed three tank battalions and three armored infantry battalions. These six battalions fought under three brigade-equivalent headquarters known as Combat Commands (A, B, and R). This Combat Command structure was meant to be a headquarters only.

General Adna Romanza Chaffee, first head of the Armored Force, conceptualized the CCA, CCB, CCR structure as early as 1936. As envisioned by Chaffee the Combat Commands were to have no fixed organization. Rather the armored division commander would assign combat elements to the commands based on the requirements of a specific mission. Most armored divisions employed Chaffee's idea with various modifications. The combat commands possessed no permanently fixed assigned units, although habitual relationships did develop in most units. The combat commands received task organized battalions and attached tank destroyer, armored engineer and air defense artillery platoons as well as other assets tailored to the specific mission. A member of a battalion task force in today's U.S. Army would find a World War II task force within a combat command a very familiar organization that integrated combined arms assets.²⁶ Regardless of the use of combat commands this paper is concerned primarily with the battalion and company ratios that prevailed in U.S. Army armored division operations.

The heavy division section of the report is notable for the fact that it describes the combat commands as normally functioning with two task forces. Each task force normally comprised a tank battalion, an infantry or armored infantry battalion, an artillery

battalion and attached engineer, air defense and tank destroyer elements. The predominant feature of this method of operating was the necessity to attach more infantry to the organization for combat missions. The report includes the comment that an entire additional infantry *regiment* was sometimes provided by corps for attachment to a heavy armored division.²⁷ This rather hefty attachment was common enough to elicit comment in the report's section on division organization. The reason why is apparent in the broader panel's conclusion. This conclusion states that the heavy division structure was deficient in infantry. Considering the fact that optimal use required the attachment of a full third of an infantry division--a regiment--one can easily see why.

The report concluded the heavy division was deficient in infantry while simultaneously recommending that the light division structure was not robust enough. The board therefore recommended against McNair's streamlining down to six maneuver (tank and infantry) battalions per division. The panel both wanted more infantry in the armored division and expressed a preference for a nine maneuver battalion division rather than the six battalions of McNair's design.

In regard to the light division structure, the report commented that it too sometimes received additional attached infantry.²⁸ The light division's combat commands sometimes fought with two task forces, one of which had a preponderance of armor companies, the other of infantry companies. A division that fought with two-task-force combat commands would, at least at the time in question, probably be using its CCR as a genuine fighting combat command with the CCR having its own two task forces. Other examples reveal CCA and CCB of light divisions going into combat with three task forces a piece. This latter example would leave no battalion-sized elements

underneath the CCR. In this latter case the CCR might be used as a reserve or a headquarters for replacements. Division commanders had the flexibility to use these combat commands in either method or any other they could devise. The only example that seems not to have worked well is an attempt to standardize the commands as if they were three old-style regiments.

Though theoretically possible in current U.S. Army divisional structure it is hard to imagine this type of fluid task organizing among brigade-sized elements coming naturally to a division's personnel. These task forces will be referred to as armor heavy and infantry heavy respectively depending on the preponderance of the type of companies within the task force. Normally this task organizing would require one task force organized under the tank battalion headquarters to retain three of its four organic companies (one of which had light tanks) while receiving attachment of an armored infantry company. The second task force, organized under an armored infantry battalion headquarters would possess two of its three infantry companies and an attached tank company. This attached tank company would almost always be a medium, Sherman-equipped, tank company rather than a Stuart-equipped light tank company. The board assessed that this tank heavy--infantry heavy task force mix proved problematic in fluid situations. The board pointed out that one could not identify separate axes of advance for each task force, one of which was suitable for a tank-heavy task force another for an infantry-heavy one. The terrain in which they fought, in other words, did not cooperate with the deficiencies of U.S. armored division structure.²⁹ This need for each type of task force to be capable of operating on varied terrain was but one more contributing rationale to the preference for at least a 1-to-1 ratio in tank to infantry units.

Regrettably a transcript of the meetings of the Armored Section does not seem to exist. As a result one can only speculate as to whether or not the board was instructed to include historical examples or provided them on its own initiative in order to lend additional support to its recommendations. Regardless of the board's motivation for including them, the six historical examples are illuminating in regard to American views of mechanized infantry doctrine at the end of World War II. It must be remembered that the inclusion of these examples would certainly have been seen by the board participants as a significant contribution to the Army's future competence in mechanized warfare. Considering the sometimes facile manner in which World War II mechanized warfare is reduced to the notion of "tank warfare" or to be more brutal, "panzer porn,"³⁰ these examples illuminate how the Army actually conducted armored warfare at the tactical level.³¹ These examples are worth discussing at some length. They not only represent a conscious attempt at imparting a legacy of "lessons learned" by the officers of the board, they will for this paper provide evidence of the battlefield significance of dismounted action and maneuver in the mechanized fight.

The first example, "Capture of a City by Armor," suggests a reconsideration of the notion that armored forces will have the luxury of avoiding urban terrain. In this action the 6th Armored Division rapidly attacked and seized the town of Muhlhausen (population 30,000). The division employed its CCA and CCB with each combat command using three task forces. Combat Command A was comprised of two tank-heavy task forces, each with an armored infantry company attached, and one infantry-heavy task force with a medium (Sherman-equipped) tank company attached. To create these attachments, one of the tank battalions detached one medium tank company while

the other detached both a medium company and its light company. It is possible the light tank company was sent on an unrecorded supporting mission as it does not appear as an attachment in the task organization. The overall composition of the CCA was six tank companies and four armored infantry companies. It should be remembered that tank battalions of the era possessed four tank companies, one of which was light (Stuart equipped), while the armored infantry battalions possessed only three armored rifle companies. This means that the fourth armored infantry company within CCA was cross-attached from one of the armored infantry battalions in CCB. Combat Command B in this example was the infantry-heavy command comprised of two armored-infantry-heavy task forces and one tank-heavy task force. If there was one consistency throughout the history of U.S. Army armored division use in World War II, it was the employment of tank and infantry companies cross-attached at the battalion task force level. In other words tank and armored infantry battalions seldom if ever fought "pure." In the case of CCB a mix of five tank and five armored infantry companies resulted from its various cross attachments. Similar to CCA, one company (tank in this case) had to come from a battalion in another combat command. This "Capture of a City by Armor" example suggests the battlefield validated need to maintain at least a one-to-one ratio of tank to infantry units was so great, cross-attachment of a company from one combat command to another was no obstacle to maintaining it.

In the execution of the attack on Muhlhausen, the bulk of the division maneuvered as if to bypass the town but then turned to seal it off and block escape routes out of it. Once this was achieved two of the infantry-heavy task forces attacked to clear the town. This action of an armored division attacking built-up areas is significant. Later this paper

will examine more contemporary doctrinal suggestions claiming difficulties in dismounted performance among Bradley-equipped infantry are not a problem of the number of dismounts but rather an issue of improper utilization. In this view armored infantry is specially designed to assist the forward movement of tanks. It is therefore, in this view, a mistake to ask armored infantry to perform standard infantry functions such as the seizure or defense of prepared positions.

However, in the historical example we have just noted, the 6th Armored Division, by a combination of close tank-infantry cooperation defied the doctrinal overspecialization inherent in a dichotomy between standard and armored infantry. The realities and opportunities of the campaign and the battlefield required the 6th Armored Division to seize Muhlhausen. Real war in this case did not allow an armored division to rest on function and bypass the area in expectation of a standard infantry formation coming along and performing its doctrinally assigned task of seizing a prepared position. Indeed this example suggests that, in this situation, precisely because it was armored, the 6th Armored Division's seizure of Muhlhausen was characterized by brief resistance and numerous surrenders.³²

The 6th Armored Division's officers judged the German force to have been capable of a much tougher defense than they in fact rendered. Captured German officers revealed that the rapidity of the encirclement and attack had disrupted their defense. The blocking task forces seem to have surprised German soldiers withdrawing under the pressure of the attack of the two infantry heavy task forces. As a result many of them surrendered. It is important to describe the nature of this close tank-infantry-artillery team. Field artillery battalions were assigned to four of the task forces. Each of the two

task forces assaulting the town had one assigned. As a result four armored infantry and two tank companies along with tank destroyers and engineers assaulted into the town, closely supported by artillery. While a town clearing operation is obviously an infantry intensive task, the thirty-four tanks (assuming full strength) of the assault force provided mobile protected firepower to aid the infantry action. Likewise the various blocking positions were also mixes of tanks and infantry. Even assuming the Germans could have employed antitank guns to make a hole through the tanks, their employment would have been vulnerable to tank fire, infantry machine guns, mortars, and threatened close assault. While the specific tactical situation is impossible to discern from the report, the German dilemma was clearly aggravated in a way which would not have been the case had tanks alone or infantry alone attempted either the assault or blocking missions.

The second example in the report, “Attack by One Combat Command (Heavy Armored Division) to Restore Impetus to an Attack Which Had Lost Momentum,” uses a long title to reveal the persistent deficiency of the Heavy Division structure, namely its shortage of infantry. In the midst of the difficult Huertgen Forest campaign the 3rd Armored Division deployed during 9-11 December 1944 to press the attack between the German towns of Langerwehe and Hoven. Combat Command R was composed of one tank-heavy and one infantry-heavy task force. While this attack was ultimately successful, the report recounts that “it was realized” that the tank heavy task force “was short of infantry.”³³ The armored combat command found it difficult to dislodge the determined German resistance without more infantry. At the same time tanks were also needed as infantry-only attacks in the area had become bogged down. With infantry companies in a heavy division at a premium an entire regiment from the neighboring 9th

Infantry Division was attached to CCR in order to provide the necessary tank infantry mix. What is particularly interesting is that the action took on the characteristic of successive seizure of intermediate objectives on the way to Hoven. As objectives were seized and cleared of enemy forces, task organization continued to change flexibly. At one point a battalion of the 60th Infantry (the regiment from the 9th Division) and a medium tank company were combined into a new task force. Meanwhile the two task forces minus this tank company were combined into one to continue the advance. This reflects combat losses as well as tailoring forces to meet the mission. It also reflects the primacy field commanders placed on tank-infantry cooperation and the flexibility with which they met these challenges.³⁴

The third example, titled “Infantry With Tanks,” provides startling witness to the emphasis placed on ensuring tanks and infantry fought in close proximity to one another. In this fight CCR 2nd Armored Division attacked with two task forces. One task force attacked with tanks in the lead and infantry on foot following about 200 yards behind. The second task force deployed rapidly to seize a ridgeline, which rendered untenable the enemy position the first task force was assaulting. What is remarkable is that the infantry of the second task force rode on the tanks rather than deploying on foot or riding forward on their half-tracks. In this action the tanks halted short of the crest of the ridge while the infantry advanced up onto it.³⁵

The fourth example offers a similar employment of armored infantry riding on tanks. In this attack a task force of the 6th Armored Division attacked a German position of thirty-three concrete-emplaced 88-millimeter guns. A field artillery smoke and high explosive preparatory fire and subsequent fighter-bomber attack suppressed the enemy

positions while the task force approached. One medium tank company with a platoon of armored infantry riding on it encircled the enemy on the left while a force of like composition did the same on the right.³⁶

U.S. armored infantry riding on tanks, as in these two examples, was not uncommon. Celebrated armored actions such as Lieutenant Colonel Creighton Abrams' battalion's role in 4th Armored Division's movement to contact to relieve Bastogne also provides an example of this technique. That the U.S. Army, plentifully supplied with half-tracks, should have resorted to a technique normally associated with the armored-vehicle-starved Soviet mechanized infantry is revealing. The use of this technique indicates the primacy of close tank-infantry cooperation in the minds of the participants. Preserving the close integration of the tank-infantry team was so important commanders exposed infantry on the exterior of tanks rather than risk having them fall behind. In many combat incidents riding on the tank was preferable to following entirely on foot or riding in a half-track. The half-track, despite its superiority to a truck, still lacked the ability to keep pace with the tank in cross-country movement. This technique was so prevalent that a drill with accompanying diagram for a squad to mount onto a tank was included in Appendix G of the November 1944 version of FM 17-40, *Armored Infantry Company*. One might expect to see such a drill in the Infantry Company field manual, as a standard infantry company would have only nonarmored trucks to move its squads. The drill's inclusion in a field manual for infantry fully equipped with half-tracks reveals volumes about the value experienced soldiers placed on close tank infantry cooperation.

The fifth example is an account of Task Force Engeman's seizure of the Ludendorff bridge at Remagen. A dismounted armored infantry company and medium

tank platoon working in close concert effected seizure of the bridge. The tank platoon provided covering fire from the near bank of the Rhine. The infantry assaulted across the bridge clearing out defending machine-guns and continued the assault to the far side, destroying snipers and antiaircraft guns. Given the nature of this mission, it is difficult to see how a pure tank or pure infantry force could have secured the bridge.³⁷

The sixth example provides an American parallel to the German Eastern Front experience of using a mechanized-infantry-heavy force to counterattack a bridgehead the enemy has succeeded in establishing across a river. An armored-infantry-heavy task force (two armored infantry companies and one tank company) supported by a field artillery battalion conducted the main attack into a wooded area in which the Germans had begun to dig in. Interestingly enough, a light tank company with a force of infantry attached conducted a successful supporting attack as part of this operation. The Stuart-equipped light tank companies were usually kept away from the main fighting and performed what amounted to screening, blocking or delaying missions for the combat commands they were part of. It is interesting in this case that a commander chose to use them in an assault on enemy infantry in a wooded area (albeit not dug in) in a tank infantry team.³⁸

Evidence that effective employment of mechanized warfare in World War II was characterized by intimate tank-infantry cooperation is not confined to the ETO General Board report. Unit histories and the few scholarly works that focus on tactical techniques and procedures are replete with accounts remarkably similar to the six examples we have just reviewed from the General Board report. Michael Doubler's *Closing With the Enemy* is a recent example of such work and will be discussed shortly. The degree to which

seamless tank-infantry-artillery cooperation was a requirement for tactical success in World War II is not, however, as widely acknowledged or deeply understood in the literature as these accounts would suggest. The relative paucity of historical works on the tactical side of military history is partly to blame. So too is the role played by intransigent senior leaders during the prewar debates over mechanization, many of whom were attempting to preserve an almost metaphysical place for infantry as the arm which all others had to support.³⁹ This intransigence of course had the opposite intended effect. In its own way it contributed to a reaction. This reaction reinforced tendencies on the part of some mechanized advocates to exaggerate the self-sufficiency of the tank. It contributed to the inclusion of minimal infantry and artillery in tank formation structures.

In regard to historical studies focused on tactics the pre-eminent recent example is Michael D. Doubler's *Closing With the Enemy*. Tactical history is less common for a good reason. A minute understanding of past tactics runs the risk of obsolescence as time passes. Doubler, however, makes a strong case that the nature of the modern tactical environment has not changed enough to obviate the essential outlines of combined arms warfare at the tactical level during World War II--the essence of which remains tank-infantry cooperation. Doubler also avoids presenting an account of tactical history of interest only to the specialist by placing his discussion of World War II tactical history in the context of recent negative scholarly assessments of the U.S. Army's performance in World War II.⁴⁰ Doubler emphasizes the adaptability, learning capacity, and willingness to experiment displayed by American forces.

Doubler chronicles the solutions the Army arrived at for breaking through the bocage country in the Normandy campaign. These solutions offer further examples of

close tank-infantry cooperation but in this case in an unusual environment. Different units came up with different solutions. Arguably the most interesting is that of the 29th Infantry Division. The 29th Division organized hedgerow assault teams in a creative small unit mix. The mix consisted of one tank, one infantry squad, an engineer team, a light machine gun and a 60-millimeter mortar. The Sherman tank would ram into the hedgerow and begin firing at the opposite end. Two jury-rigged pipes, welded to the front of the tank, embedded themselves into the hedgerow embankment when the tank slammed into it. The tank fired white phosphorous shells at likely machine-gun locations and then began to suppress the far hedgerow with machine gun fire. While the mortar shelled beyond the far hedgerow, the infantry squad assaulted toward it. As the squad masked the tank's machine-gun fire, the tank would pull back from the near hedgerow. As the tank pulled back two large holes were left in the embankment as a result of the jury-rigged pipes on the tank's front slope. The engineers quickly placed explosive charges in the holes. When detonated these charges created a gap in the embankment which allowed the Sherman to pass through the hedgerow and advance to assist the infantry in clearing out the far hedgerow which it was now attacking with the light machine-gun, rifle fire, grenades and when necessary by close assault.⁴¹

The 29th Division's hedgerow technique is a compelling example of the integration of combined arms at the tactical level. A tank appears which immediately places suppressive fire on likely enemy locations. Simultaneously mortar fire falls immediately behind those likely locations. This suppresses the defenders and threatens to inflict casualties on any force that attempts to reposition to attack the tank with hand-held weapons as well as any force that attempts to reinforce the defenders. Simultaneously,

infantry small arms fire adds its suppressive weight against the defender's position. Enemy infantry that attempted to open fire on the squad would reveal their position to friendly U.S. tank and .50 caliber fire. Any force maneuvering to attack the tank with hand-held weapons would have to contend with both the advancing squad and adjusted mortar fires. The defender has little opportunity to try and separate the tank from the infantry thanks to the engineer mobility effort. Based on the typical German hedgerow defense this tactical solution of the 29th Infantry Division placed the enemy in a dilemma. In order to react to one arm he unavoidably makes himself more vulnerable to another. This is achieved by the simultaneous application of combined arms at the tactical level.⁴²

Because the numbers of soldiers present within an armored or mechanized infantry battalion have not remained constant over the years, a more detailed examination of the numbers of tanks and dismounted infantry being reviewed here is in order. It is one thing to discuss 1-to-1 and 3-to-2 ratios of tank and armored infantry companies and battalions, it is quite another to have a more specific understanding of what this looked like on the ground. The number of tanks is straightforward enough. At full strength the World War II tank platoon had five tanks. There were three platoons in a company, and the company headquarters element had three tanks. While units would seldom be at full-strength, full-strength numbers remain useful for comparison. Thus there were a total of eighteen tanks in a tank company of this era and four total companies in a battalion making a total of seventy-two tanks, exclusive of the battalion headquarters tanks, fifty-four⁴³ of them being medium tanks.⁴⁴ The armored infantry battalion possessed three very robust armored infantry companies. Each company had an antitank platoon, and each of

the three rifle platoons in the company had a 60-millimeter mortar squad and a light machine-gun squad. For comparison to later structures, however, it is best to simply count the numbers of rifle squads and personnel within them. Logically the mortar, light machine gun and antitank platoons have their own equivalents in later organizations.

Further, the squads remain the key component of dismounted maneuver. Though there were successive TOEs for the armored rifle squad during World War II, the squad usually possessed twelve members one of whom, however, was a driver who always stayed with the vehicle.⁴⁵ This structure provided the thirty-three men per platoon in maneuvering infantry squads and therefore ninety-nine men in squads per company. There would of course be more than this in regard to the footprint of the unit, as both the antitank platoon and the light machine-gun squads would also fight primarily dismounted.⁴⁶

The result of this tally is that a tank battalion to armored infantry battalion match up results in a maneuvering force of fifty-four medium tanks with 297 dismounted maneuver infantrymen in full strength squads. Needless to say Bradley-equipped infantry numbers are quite dissimilar. When the Bradley first came out its dismounted squad was a six-man organization, and that was only when one of the men was not being used to reload the TOW missile system. The overall complement for a Bradley-equipped force was 56 tanks (excluding the two in the battalion HQ section) for 216 dismounts in squads if two entire battalions were task organized together.

Comparison of pre-World War II theory with actual World War II practice reveals that prewar armored warfare theory underestimated the true requirement for mechanized infantry. It was not only the previously cited General Board Study No. 48,

which reflected recognition of this underestimate. General Board Study No. 17, "Types of Divisions-Post-War [sic] Army" asserted,

It can be stated that combat experience has definitely shown the need for at least parity between infantry and tank units in an armored division. Consensus of field commanders is that the ratio of infantry to tank units at company level should be three to two.⁴⁷

Nor did continued immediate post war reflection alter this view. The 1946 Army Ground Forces Study No. 27 also maintained this correction to prewar theory by stating, "As a result of combat experience the infantry element in the armored division grew in importance."⁴⁸ In fact even the three to two ratio underestimated the amount of infantry desired by some General Board members. The entire Armored Division Committee of the General Board comprised thirteen members. Seven voted for the recommended 3-to-2 ratio, five members voted for an even larger 2-to-1 ratio, while only one member voted for tank to infantry company parity.⁴⁹

The prewar theoretical error of inadequate infantry within armored divisions stemmed from a tendency to use a weapon system approach to theory that viewed the tank as a decisive weapon around which other weapons or arms needed to be arranged in support. This weapon system approach was normally articulated via a supporting-supported paradigm. Inherent in this paradigm is a tendency to assign specialized functions for the arms rather than integrate them. Ironically enough, the tendency to view the tank as a specialized decisive arm to be supported by other arms was conceptually identical to regressive notions that the infantry was the decisive arm. Combat-experience-based World War II progress in tactical doctrine consisted of ever-deeper close cooperation of arms in a flexible manner rather than the cosmetic effect of replacing infantry with tanks as the primary arm. Combat-based reflections further suppressed the

tendency to specialization in both types of tanks and roles for the armored division. While there were then⁵⁰ and are now those who believe such moves prevented the U.S. Army from fully realizing the decisive potential of armored formations, the actual tactical history of combined arms warfare at the tactical level suggests otherwise.

The Enduring Legacy of World War II

The preceding section provides an argument that, in the eyes of World War II practitioners, even in a highly mechanized environment, dismounted maneuver in close cooperation with tanks, not vehicle firepower, was infantry's enduring contribution to the combined arms fight. This study will use the term dismounted maneuver to describe the actions taken by armored infantry in those operations that exhibited the close cooperation called for in the U.S. Army's 1942 FM 17-33, the *Tank Battalion Field Manual*. The preceding section has offered historical accounts of what effective dismounted maneuver looks like. These accounts are specifically accounts of armored infantry action, that is the action of mechanized infantry within armored divisions. The credibility of these accounts, or historical examples as they are termed in the General Board Studies, derives from the awareness the study participants had of the significance of their own role as preservers of the World War II experience. The officers in the General Board Study understood they were to play a major role in preserving for the Army the organizational knowledge derived from fighting in Europe in World War II.

These historical examples showed infantry fighting on foot within intimate proximity of tanks. In these accounts the effect of tank firepower and shock action is complemented by the capacity of infantry to get into every nook and cranny of the ground. By permeating and penetrating the terrain--and in many cases the dispositions of

the enemy--infantry ensured the destruction of enemy forces that tanks--by virtue of their size, weapons mix, and weapon acquisition limitations--could not effect. Other situations occurred in which it would be overkill to use a largely tank force. Still others occurred wherein a largely infantry force was required but a small amount of tanks greatly assisted the operation. This question of tank overkill has become more relevant over the years as cavalry-light tank schools of thought have given way--based on survivability weaknesses proven in combat--to the view of a main battle tank. While the main battle tank is meant to serve multi-purpose functions, compromises had to be made as designers increased gun caliber over the years. This increase is necessary to ensure the tank can destroy other tanks but decreases the number of main gun rounds the vehicle can carry.

The techniques revealed in these examples are unlike the routine procedures the U.S. Army practices today when tanks and infantry fight together. The examples reveal such a close cooperation that whole infantry companies are frequently mated up with whole tank companies. A conceptual explanation of this is offered by Paul A. Dyster in his doctoral dissertation, "In the Wake of the Tank." Here Dyster comments on Richard Ogorkiewicz's summation of what World War II combat experience and subsequent weapons development had taught the world's armies about mechanized warfare in general and tank-infantry cooperation in particular. This was a lesson the advantages of which were secured by the movement in virtually all World War II armies to an armored division structure with a one to one ratio of tank to infantry battalions. Commenting on this trend Dyster's summary of Ogorkiewicz is one of the most succinct available,

Within the combined arms team it was increasingly impossible to think in terms of distinct tank and infantry roles. "Tanks themselves have ceased to be a distinct assault element," wrote Richard M. Ogorkiewicz, "and have assumed instead the more general role of a source of mobile medium-weight firepower" within the

armored battlegroup. Infantry, too, is no longer able to pursue either traditional stereotyped role: it can no longer masquerade as the dominant element to which tanks should be subordinate, nor can it be a “passive follower merely occupying or holding ground, as it was inclined to be in the early armoured divisions.”⁵¹ Tanks and infantry would now be “active partners.”⁵¹

Dyster’s illumination of Ogorkiewicz’s views, points to the issue of the paradigms military writers and field manuals have traditionally employed to discuss combined arms. The above quote refutes a paradigm that seeks to describe the relationship of arms as one of supported and supporting. Linguistically the supporting-supported terminology seems to have its origins in the notion of infantry supports in the still predominately linear world of Nineteenth century warfare. This would make at least the linguistic origins of the paradigm an obstacle to more progressive notions of deep battle, blitzkrieg, and attack throughout the enemy’s operational depth.

Alluded to earlier is the idea that dismounted maneuver was recognized in World War II as mechanized infantry’s enduring contribution to the mechanized fight. Describing infantry’s essential contribution to the mechanized fight as dismounted maneuver does not diminish the value or significance of the lethality of the weapon systems infantry possesses. It does not mean, in other words, that firepower is unimportant. It does suggest that Fullerite notions that infantry merely holds or organizes terrain captured by tanks are not borne out by actual mechanized combat experience. Dismounted maneuver is a useful term with which to describe the actual effective experience of the infantry’s function in the mechanized fight during World War II and will be used as such throughout this paper.

The historical examples in the preceding section also show cross attachment of infantry and tanks at very low echelons--cross attachment that was so habitual it became

de facto integration. Creative ideas on cross attachment varied throughout the Army's armored divisions. One of the most unique was that of the 5th Armored Division. It created its own original hybrid section consisting of a tank, a half-track and an infantry squad. This team worked continually side by side and developed an unusual level of cohesion and tank-infantry coordination.⁵²

Reflection during and after the war created, with few exceptions, an overwhelmingly uniform trend to increase the number of infantry forces in armored divisions. The need for more infantry was both proffered as an ideal and executed in unit redesign during the war. The result was a profound balance of combined arms and defined an offensive and not merely tank-protective role for the infantry. The German 1941 manual would go even further enunciating a specific need for offensive action by foot infantry stating, "Motorized infantry units form the offensive infantry element in the armored division."⁵³

Speculation of the prewar era had not only underestimated the amount of infantry needed, it has seriously erred in limiting infantry's offensive role in the mechanized fight. Practical experience, such as that reflected in the 1941 German manual just quoted, tended to emphasize flexibility, all arms, and the full embrace of an offensive role for infantry in the combined arms fight.

In light of the later difficulties the U.S. Army would have with the Bradley, it is germane to point out the World War II practitioners' thoughts on the mechanized infantry's vehicle. They did not identify a requirement for the infantry's vehicle to possess a weapon to use for suppression of enemy antitank defenses. Of course antitank weapons of the 1940s did not possess the range contemporary antitank weapons do so it

was not as salient an issue. Still, paramount to the thinking of the General Board and other such bodies was the need for a vehicle that provided better protection, to include overhead cover or “move under armor” capability and cross-country mobility.⁵⁴

Of these two mentioned requirements cross-country mobility--the need to keep up with the tanks--was paramount. The greatest limitation American veterans perceived in the armored infantry vehicle, the M2 and M3 half-track, was its inability to always keep up with the tank. Many times this deficiency was manifested by lack of cross-country mobility rather than lack of speed. It was not a matter of tanks being able to move 20 miles per hour and half-tracks some lesser speed. Rather difficulties arose because the carrier was after all a half-track and it would bog down or slow down in places a fully tracked vehicle would not. The degree to which American infantry used the expedient of riding on tanks into battle is astounding, but the evidence from actual battle reports is overwhelming.⁵⁵ As has been mentioned, this was such a ubiquitous practice, the Army's field manuals on tanks and armored infantry included diagrams on where specific members of an infantry squad and platoon headquarters should ride on the tank.⁵⁶ The fact that mobility was cited more frequently than overhead protection points toward a primacy on close cooperation with the tank.

Dismounted Maneuver and Combined Arms

A lynchpin of the dismounted maneuver provided by infantry was the articulation of the squad into an element that could conduct independent maneuver. During and after World War II most armies moved toward fielding an infantry squad with at least two light machine-guns or automatic rifles and a mix of hand-held antitank and bunker busting weapons. Above all, however, quality infantry moved in the direction of a squad

that could conduct independent maneuver. Any subsequent reversion to a strictly uniform squad that depended on another element to provide centralized machine-gun fire often indicated an erosion of quality.⁵⁷ This tendency is noticeable throughout the twentieth century history of infantry platoons. If squads are well led and expected to display initiative and independent maneuver, then suppressive weapons become organic to the squad. On the other hand, if squads are, in effect, not trusted, then suppressive weapons are centralized under platoon control or higher.

Tanks tended to rely on: their own high explosive rounds; their own machine guns (the preferred method); infantry assault and fire; and artillery fire to provide suppressive firepower. Tank forces expected the infantry to provide a complementary effect to make tank shock action more effective and to make tank seizure of terrain more definitive. These effects could only be secured by infantry serving “shoulder to track” as it were, in both the seizure of enemy objectives and in hasty defenses and blocking tasks. These hasty defenses and blocking actions became increasingly associated with successful armored warfare as time went on. This was particularly so with operations that sought to encircle enemy forces. The infantry, by bringing dismounted maneuver to the offensive mix, provided the decisive element when it came to the destruction of those enemy forces tanks alone could not completely effect.

Likewise infantry offensive dismounted maneuver achieved its full capability in most terrain types only when accompanied by tanks. Infantry’s essential capability of seizing and clearing terrain as well as closing with and ensuring the destruction or displacement of enemy antitank forces guaranteed that armor forces could rapidly penetrate a defense. For this capability and other reasons as well, most armored officers

in World War II looked to infantry as a component of a combined arms solution to battlefield challenges. In this solution armored infantry, almost always in conjunction with tanks, was able to unhinge enemy defenses or contain encircled enemy troops in a way tanks alone could not. Conversely it was held, that ideally, infantry divisions should have tanks organic to them to capitalize on the synergy between tanks and infantry.

As to the armored infantry within tank divisions, it also protected tanks when and where the tank's mission required closing with the enemy. By unhinging enemy defenses the infantry helped make mobile penetration possible; moreover, by becoming a usually necessary if not primary means of containing encircled troops it helped make such mobile penetrations truly effective.

Central to understanding the real impact of World War II on subsequent thinking is acknowledging the degree to which the experience of mechanized warfare belied many of the specific prescriptions of the prewar theorists. Further, one has to contend with the issue of the degree to which Liddell Hart, Fuller, Estienne, and others were in fact articulating a combined arms theory of warfare. Claiming they were doing so is highly problematic. Subsequent generations have sometimes confused an articulation of the need for maneuver-oriented warfare as an adequate description of combined arms. There is no reason to assume that a grasp of the opportunity created by armor mobility to strike into the operational depth of the enemy has anything necessarily to do with a comprehension of the value of combined arms at the tactical level. Commentators usually are aware of the fact that such maneuver is made possible only by a combined arms approach, but that awareness has benefit of hindsight. Historically one cannot automatically associate a grasp of combined arms warfare with advanced notions about

mechanization. This study suggests that a failure to embrace a genuinely combined arms approach has historically plagued much doctrine writing and military speculation. Fuller's analogy of tank warfare to naval surface warfare is only the most notorious and extreme example of this line of thinking.

One of the more recent direct influences of this mode of thought was the all-tank concept more or less espoused by Fuller and so disastrously indulged in by the Israelis after the 1967 war. While Fuller can be excused as a man breaking new ground, subsequent generations have less cause to make this mistake. As already mentioned, experience on the World War II battlefield identified a requirement for infantry within the mechanized fight for an amount of infantry which surpassed theoretical prewar expectations. The Soviet, German, American, and to a lesser extent, British experiences show each World War II army arriving at a strikingly similar combined arms mix for its preferred armored structure. This structure required at least a 1-to-1 ratio of tank to infantry to artillery at both the company and battalion echelons. This preference was exhibited not only by the specific United States Army General Board report,⁵⁸ it was echoed by Wehrmacht panzer division commanders.⁵⁹

To the unacknowledged surprise of some theorists, World War II combat experience did not validate extreme Fullerite notions that armor penetrates while infantry holds or mops up. Rather, it validated the concept of close cooperation between the arms and revealed that tanks alone or even tanks with an anemic amount of infantry could not effectively execute the more glamorous battlefield offensive operations of pursuit and exploitation, let alone achieve effective penetration into the enemy's operational depth.

Tanks needed sufficient infantry to go along with them. In all cases the sheer density or numbers of infantry needed was more than force developers and doctrine writers of the time initially thought necessary. This was true even in the case of the Germans. They differed only in that they identified and sought to fix the problem earlier than the other powers. One of the reorganizations stemming from German review of their invasion of Poland was an increase of infantry battalions within the infantry regiment of the Panzer divisions from three to four.⁶⁰ This kind of examination and analysis, always resulting in more infantry being integrated with tank formations, continued throughout World War II.

Summary of World War II Trends

Immediate post-World-War II reflection on mechanized infantry consisted of four major trends that would prove highly influential for the future. First, and perhaps the least controversial at the time, was the emphasis on a balanced force with, if anything, a preference for more infantry units than tank units at any given echelon. The European Theater General Board had stated this recommendation as a 3-to-2 preference, a desire remarkably similar to opinions like those of Wehrmacht General Hasso von Manteuffel, who desired two infantry regiments and one tank regiment to form the subordinate maneuver command of the tank division.⁶¹

Second, another tendency made possible by the force ratio mix was the technique of directly integrating tanks and infantry at very low echelons. As was already mentioned the experience of the 5th Armored Division, pushing integration down all the way to, in effect, section level is the most dramatic example. In the 5th Armored Division one tank, one half-track, and seventeen infantrymen functioned as the smallest

tactical unit.⁶² In most armies though, the desire for low level integration resulted in a match up of tank to infantry companies. Significantly, in the German Army tank shortages compelled attempts to use the Sd.Kfz. 251 and 253s half-tracks as substitutes for tanks. The utility of this was of course quite limited, but the memory of needing the armored infantry carrier to provide mobile protected firepower would remain with some German officers. It is important to point out, however, that this need derived from a context in which there was a shortage of tanks.

The third, and most important, influence was that practical experience drove away any tendency to think in more traditional supported-supporting terms. Combat experience showed that there was no one weapon that was singularly decisive around which the efforts of all other arms should be arranged. If anything armies that were incapable of fully mechanizing all their arms recognized their failure as a glaring deficiency. This deficiency prevented them from exercising combined arms warfare at an effective tempo. The examples of this force mix in the preceding sections provide continued evidence that one trend in modern warfare is to press the aggregation of combined arms down to lower and lower levels.

A fourth issue, not so much a trend made evident by the war, was a specific item of speculation invalidated by the war. Much of the above appreciation for the role of infantry was a departure from inspiring flights of fancy that envisioned tanks as the modern day equivalent of the armored knight. If Fuller had viewed tanks as similar to naval forces employed at sea, the realities of combined arms warfare had quickly placed them back on the ground. During the interwar years part of the appeal of the view that tanks would become dominant, was its utility in providing a rationale for the creation of a

small, elite, professional army. To some degree this was a practical selling point as limited inter-war budgets could not support a large military establishment. Further, in the case of Great Britain naval expenditures of necessity were a critical part of the defense budget. But the notion, the earliest and most vigorous spokesman for which was Fuller, that armor was the smart man's replacement for large numbers of infantry was not borne out by the experience of World War II. While massed infantry attempting shock action was certainly a thing of the past, World War II had demonstrated that a requirement for large numbers of well-trained infantry might not be obsolete.

The desire to replace the huge conscript armies of the past with a small elite armored one carried considerable appeal. A small elite armored force mated nicely with beliefs in the preeminence of technological research over historical research and weapons effects over doctrinal integration. Proponents like Fuller saw armor as a means of avoiding the mass conscripted and clumsy ground forces of the Great War. In this sense, distorted notions about the tank fighting alone are examples of looking backward to the last war.

The extent to which the military community and military theorists corrected earlier arguing points from the days of mechanized innovation is an open question. The notion that the right gadget will replace the need to have large numbers of soldiers within a nation's ground forces seems permanently embedded as a Western cultural preference. Fuller and Liddell Hart had speculated that mechanization would allow nations to defend themselves cheaper with less manpower. The experience of World War II failed to bear this out. It is important to note that this idea is more than a juxtaposition between large conscript forces on one hand and small elite armored warfare professionals on the other.

Implicit is, again, a view that tanks specifically and mechanization generally make a particular arm or weapon system--the tank--a decisive weapon around which all other elements should focus. In such a theoretical equation infantry has neither the mobility or firepower to add anything to the fight.

Surprisingly, and in large measure due to the lack of historically-based doctrinal research, post-World War II U.S. Army thinking on mechanized combined arms warfare would regress in the direction of Fuller's earlier concepts.

¹ Fuller suggested Tanks did win and could continue to win virtually unaided by other arms, see Brian Holden Reid, *J. F. C. Fuller: Military Thinker* (New York: St. Martin's Press, 1987), 60.

² Ibid.

³ Sir Basil Liddell Hart, *The Remaking of Modern Armies* (Westport CT: Greenwood Press Publishers, 1980), 286.

⁴ See, Giulio Douhet, trans. Dino Ferrari, *The Command of the Air* (Washington D.C., Office of Air Force History, 1983).

⁵ J. F. C. Fuller, *Armored Warfare* (Westport, CT: Greenwood Press, 1983), 18.

⁶ Ibid., 16.

⁷ Ibid., 185-186.

⁸ Liddell Hart, *The Remaking of Modern Armies*, 71.

⁹ John A. English and Bruce I. Gudmundson, *On Infantry: Revised Edition* (Westport, CT: Praeger, 1994), 47-48.

¹⁰ Ibid., 51.

¹¹ Ibid., 49-50.

¹² Sir Basil Liddell Hart, *The Remaking of Modern Armies*, 42.

¹³ Paul Albert Dyster, "In the Wake of the Tank: The 20th Century Evolution of the Theory of Armored Warfare" (Diss., Johns Hopkins University, Baltimore, MD., 1984), 171, 172 and 174.

¹⁴ English and Gudmundson, 52-53.

¹⁵ Richard M. Ogorkiewicz, *The Design and Development of Armored Vehicles* (London: MacDonald Co., 1968), 30.

¹⁶ House, 105-110.

¹⁷ Timothy K. Nenninger, "The Development of American Armor, 1917-1940," (Thesis, Madison, Wisconsin: University of Wisconsin, 1968), 97-98.

¹⁸ Ibid., 154-156.

¹⁹ This is well accepted in the historiography of the Reichsheer. For a relatively recent summary of this connection see Florian K. Rothbrust, *Guderian's XIXth Panzer Corps and the Battle of France: Breakthrough in the Ardennes, May 1940* (New York, Westport, London: Praeger Press, 1990), 90.

²⁰ House, 82.

²¹ S. J. Lewis, *Forgotten Legions: German Army Infantry Policy 1918-1941* (New York: Praeger, 1985), 150.

²² Carlo D'Este, *Patton: A Genius for War* (New York: Harper, 1995), 811.

²³ Nenninger, 244.

²⁴ General Board, United States Forces European Theater, Study No. 48, "Organization, Equipment and Tactical Employment of the Armored Division," G3, United States Forces Europe, November 1945, 2.

²⁵ House, 106-110.

²⁶ Ibid., 105-109.

²⁷ General Board, No. 48, 7.

²⁸ Ibid., 8.

²⁹ Ibid., para. 8.e., p. 8.

³⁰ Author Stephen O’Shea uses the term “war porn” to describe the slick commercialization of war and the tools of war as well as his ambiguous reaction to it. To borrow O’Shea’s phrase for World War II tank warfare iconography, this inclination to turn modern tanks into something alluring and sexy could be termed “panzer porn.” See Stephen O’Shea, *Back to the Front: An Accidental Historian Walks the Trenches of World War I* (New York, NY: Avon Books Inc., 1996), 161 and 191.

³¹ What I am suggesting here are the second and third order effects created by simplistic references to tactics in works that are primarily focused on the operational, strategic or political realms. Such references contribute to the preservation of the myth that the action of a single weapon system such as tanks or maybe aircraft is the vehicle of decisive victory in modern war, rather than effective use of combined arms teams. Even supposedly prominent historian’s can contribute to this misunderstanding. For a recent example see the references to Hitler’s “Panzer Arm” in John Keegan’s, *A History of Warfare*. Hurling tanks at an enemy is not an accurate description of German blitzkrieg operations. Instead, combined arms, initiative at the junior level and a willingness to accept risk to one’s own flanks and supply lines had as much to do with it as anything else. It is not that an historian like Keegan does not understand the latter description, it is rather, that the language he chooses to summarize it when his main focus is elsewhere contributes to a distorted mythology of decisive single solitary weapon systems.

³² General Board, No. 48, 11.

³³ Ibid., 13.

³⁴ Ibid., 12-14.

³⁵ Ibid., 15-16.

³⁶ Ibid., 18.

³⁷ Ibid., 19.

³⁸ Ibid., 20-21.

³⁹ A quintessential example would be Chief of Infantry Major General Stephen O. Fuqua see Nenninger, 95-96.

⁴⁰ For this school in the debate see the works of Trevor N. DuPuy, Russell Weigley and Martin van Creveld, counter to them see Stephen Ambrose and Michael Doubler.

⁴¹ Michael D. Doubler, *Closing with the Enemy: How GIs Fought the War in Europe, 1944-1945* (Lawrence, KS: University of Kansas Press, 1994), 49-51.

⁴² Ibid., 59, 60, and 62.

⁴³ The actual total of medium tanks in the battalion was 60 and total tanks 78. However, three medium tanks apiece were allocated to the battalion HQ section and the artillery battalion. This thesis is concerned with the maneuvering companies so 54 is the suitable figure for comparison.

⁴⁴ United States Army Field Manual 17-33, *The Tank Battalion* (Washington D.C.: United States Government Printing Office, December 1944), 5-6.

⁴⁵ Virgil Ney, *The Evolution of the Armored Infantry Rifle Squad* (Fort Belvoir, VA: United States Army Combat Developments Command, 1965), 80-82.

⁴⁶ FM 17-40 *Armored Infantry Company*, in Virgil Ney, *The Evolution of the Armored Infantry Rifle Squad*, 38.

⁴⁷ General Board, United States Forces European Theater, Study No. 17, "Types of Divisions-Postwar Army," G3, United States Forces Europe, November 1945, 12.

⁴⁸ Kenneth Heckler, "The Armored Force Command and Center, Army Ground Forces Study No. 27, Army Ground Forces Historical Section," in Virgil Ney, *The Evolution of the Armored Infantry Rifle Squad*, 35.

⁴⁹ General Board, United States Forces European Theater, "Conference on Organization and Equipment of the Armored Division," in Study No. 17, "Types of Divisions-Postwar Army," G3, United States Forces Europe, November 1945, first page of Appendix 6, unpaginated.

⁵⁰ See the 1947 work, Mildred Hanson Gillie, *Forging the Thunderbolt*, (Harrisburg, PA: The Military Service Publishing Company, 1947), 267-270.

⁵¹ Dyster, 365.

⁵² Haworth, 28.

⁵³ German War Office, "The German Motorized Infantry Regiment," 1941, 1.

⁵⁴ For but one example see, General Board, United States Forces European Theater, Study No. 17, "Types of Divisions – Postwar Army," G3, United States Forces Europe, November 1945, 12.

⁵⁵ For support for this assertion see, General Board, United States Forces European Theater, Study No. 48, "Organization, Equipment and Tactical Employment of the Armored Division" November 1945, 9-21.

⁵⁶ War Department, FM 17-40, "Rifle Squad Mounted on Tanks," Armored Infantry Company, November 1944, Appendix G, in Virgil Ney, *The Evolution of the Armored Infantry Rifle Squad*, 87. (This page 87 is inserted before the title page in some version of Ney's work).

⁵⁷ English and Gudmundson, 131.

⁵⁸ General Board, United States Forces European Theater, Study No. 17, "Types of Divisions--Postwar Army," G3, United States Forces Europe, November 1945, 12.

⁵⁹ For one of the few exceptions to this I have been able to find see, General Ritter von Thoma, quoted in Liddell Hart, *The Other Side of the Hill*, 129. For a negative appraisal of von Thoma's precision and credibility see S. J. Lewis, *Forgotten Legions: German Army Infantry Policy 1918-1941*, (Praeger: New York, 1985), 52, fn 16.

⁶⁰ S. J. Lewis, "Reflections on German Military Reform," *Military Review*, (August 1988): 62.

⁶¹ General Hasso von Manteuffel quoted in B. H. Liddell Hart, *The Other Side of the Hill* (London: Cassel Books, 1951), 129.

⁶² Haworth, 28.

CHAPTER 3

MECHANIZED INFANTRY DOCTRINE: POST-WORLD WAR II AND THE ERA OF THE INFANTRY FIGHTING VEHICLE

Introduction

You are going to have to issue some strong guidance to the effect that Infantry and Armor will fight **together**, using the unique capabilities, of each branch to best advantage, but always operating as a team.

Brigadier General Paul Gorman to General William DePuy, 1974.¹

The above comment from Gorman to DePuy is indicative of the recurring difficulty of establishing a genuine combined arms approach to doctrine, force structure, and training. Gorman was warning, in this case, that the U.S. Army Armor school was indulging in a weapon-system approach to doctrine and needed to be reined in. DePuy would ignore this advice because he was actually sympathetic to the approach as it matched his view of the primacy of both the tank as a weapon and the NATO theater as the central focus for the Army's planning and force development.²

Introduction of Nuclear Weapons

To varying degrees the armored practitioners from the World War II era reflected on their experiences and attempted to derive recommendations for future improvements in mechanized warfare. Issues relating to mechanized infantry, while not their only focus, attracted considerable attention during the immediate post war era. Much of this effort drifted to the margins of U.S. Army published doctrinal thought for two main reasons. These reasons were the introduction of nuclear weapons and speculation that airpower may have made most ground warfare, but particularly combat by men on foot, obsolete.³

Several military futurists of this era hinted at the death of the tank,⁴ although the fact that it proved an essential, if not central, weapon during the Korean War cast at least some doubt on its obsolescence. Still, the mix of nuclear weapons, nuclear-tipped missiles and increasing developments in airpower did more than de-emphasize conventional war--it created a doctrinal crisis of purpose for the U.S. Army in the 1950s. This de-emphasis was only partially alleviated by the Korean War and subsequent Cold War build-up. The de-emphasis on conventional forces was so pronounced that numerous successive Army Chiefs of Staff would take on as their main task to convince the defense establishment that the U.S. was better served by a more balanced approach to security policy.⁵ General Maxwell Taylor, Army Chief of Staff from 1955 to 1959, was so frustrated by this imbalance that he referred to it as the "Babylonian Captivity"⁶ of the Army.

In particular these premature notions of the obsolescence of mechanized warfare had a dampening effect in doctrinal discussion on mechanized infantry. The nuclear umbrella arrived at the most inopportune time for capturing the many mechanized warfare lessons of the World War II. The dominance of focus on the nuclear issue would, in 1956, beginning with the 101st Airborne Division, drive the Army to redesign its divisions into the now infamous pentomic division.⁷ All these factors, none of them alleviated fully by the use of ground forces in the largely nonmechanized Korean War, were agents helping to create a chronological gap in the development of mechanized infantry doctrine in the U.S. Army.

Neither infantry alone nor mechanized infantry alone was the sole victim of this lack of continuity. As the 1950s progressed there existed a general crisis of purpose in

thought on ground warfare. In the midst of speculation that nuclear weapons might make ground warfare obsolete, men fighting on foot seemed particularly vulnerable. The Eisenhower administration evolved toward massive retaliation as the centerpiece of its military security policy. The German Army had ceased to exist, but when it reemerged in 1955, it credited the Wehrmacht with specific ideas about mechanized infantry that in fact the Wehrmacht probably did not ascribe to. The reflections of the German generals, while not institutionalized in Germany, were subsumed into American and British work as several of them cooperated with the Allies in analyzing German operations in World War II.⁸ Also, as time went on, some published books, and others continued to be active in professional military circles publishing essays and books. Regardless of the efforts of veterans of all sides to capture hard-earned knowledge from World War II, major policy thinking in the West followed a line which focused somewhat naively on the most recent technological assets--especially the atomic bomb. This viewpoint is typified by the comment of the U.S. Secretary of Defense in 1957, explaining that the administration is determined, "to maximize airpower and minimize the foot soldier."⁹

The attitude that modern war's technology and lethality relegates the foot soldier to near irrelevance is a recurring theme of military speculation in the post-World-War II era in the West. In fact an examination of actual warfare since World War II records a very busy life for foot soldiers—even those from the technologically advanced democracies. Yet the tendency is so pronounced that commentaries are forever proclaiming large scale wars as, "the last of their kind."

While senior World War II Army officers struggled to define Army roles under the nuclear umbrella; the nuclear focus served as an impetus to the development of

vehicles. An armored enclosure to ride around in would provide some protection from the effects of radiation. This impetus for mechanization did not, however, stem from doctrinal research on what type of infantry was needed. The Army's aptly named Babylonian Captivity caused a lack of continuity in reflection on mechanized warfare. Because of the significance of this lapse it is useful to remember the ascendancy of a comprehensive combined arms approach to doctrine at the end of World War II and note the forces that pushed it to the sidelines. The marginalization of a comprehensive approach to combined arms warfare went hand in hand with a growing disregard for the relevance of the historical combat record. In such an atmosphere mechanized infantry's actual combat uses became all but forgotten in the post-World War II era.

Tactical Influence of the Bundeswehr

After the war the U.S. Army, and especially its armored warfare proponents, sought to understand the basis for German success. When the Bundeswehr was formed in 1956, many of its officers were former Wehrmacht veterans. The Wehrmacht had fought its mechanized war with several shortcomings that later Bundeswehr officers would remember perhaps all too well. The Bundeswehr's recollection of one of these shortcomings is critical in its ultimate impact on American mechanized infantry. In the latter phases of the war tank shortages and a shortage of tank formations compelled the Germans to resort to the expedient of pressing panzergrenadier or armored infantry formations into the main mobile role. Commanders called upon panzergrenadiers formations to perform missions that would have been conducted better by both panzergrenadiers and tanks. This was particularly the case in the immense spaces of the

Eastern Front. All told the panzergrenadiers functioned well in this task but clearly not as well as they would have in a more balanced tank-infantry-artillery team.

Bundeswehr officers remembered this experience and from it derived an exaggerated view of the need for armored infantry to fight while mounted. As has been mentioned, Richard Simpkin was a British brigadier, who, both before and after retirement took upon himself a rigorous examination of mechanized warfare, its equipment, and its force structure. In his book, *Mechanized Infantry* he points out,

The panzergrenadier doctrine inherited from the Wehrmacht's experience on the Eastern Front seems to have become the ark of the covenant in Bundeswehr eyes. . . . But I at least have yet to find an example in which the use of personal weapons while mounted in their vehicles by the men of a large infantry force was taken into account in the planning of an operation, let alone became a battle winning factor.¹⁰

Simpkin's point is well taken. Convinced though the Bundeswehr were that the Wehrmacht's combat experience had identified a requirement for infantry to fight from the vehicle on the move, there does not seem to be much example of this from any World War II participant. There further seems to be no example of a former World War II senior leader identifying such a requirement. At this remove it is difficult to identify the exact link between the Bundeswehr's conception and its later influence on senior and not-so-senior American leaders. A question does remain, however, as to exactly what degree American military thinkers and students (both military and civilian) accurately imported the German idea.

The Bundeswehr and American Interpretations

The early Bundeswehr rejected the American M113 armored personnel carrier and fielded the Schuetzenpanzer 12-3, (hereafter Spz). While many writers claim the Soviet BMP-1 is the first Infantry Fighting Vehicle (IFV hereafter), the Spz, with its squad of only eight men, one 20-millimeter cannon, and accompanying doctrinal emphasis on fighting while mounted, seems to meet all the definitions offered on behalf of the BMP. However, as has been noted in Chapter 1, the French AMX-VCI and even expedients from World War II clearly anticipate the IFV.

Regardless of American perceptions of German doctrine, actual Bundeswehr practice seems to have been much more nuanced than simply trying to have infantry squads fight from within their vehicle. Indeed German practice embraced a nuance that explicitly provided for an infantry-heavy force that would fight primarily on foot--the third battalion of their late 1950s Panzergrenadier Brigades. Significantly, with the introduction of the new vehicle and its associated small squad, only two of the three infantry battalions within the German panzergrenadier brigade were equipped with the Spz 12-3. The third battalion was initially motorized, then later equipped with M113s. The specific reason to include this non-Spz equipped battalion was to provide a larger infantry component, capable of infantry-intensive tasks.¹¹

Several examples will show that the American perception of German doctrine comes across as skewed in its emphasis on the infantry squads fighting while mounted. A 1964 article in *Army* magazine, “The Panzergrenadiers Roll Again,” is the first major discussion of the Bundeswehr’s new doctrine to appear in that journal. The author speaks of the use of a “rolling attack.” This style of attack, according to the article, has the

infantry squad remain in the vehicle and fight from within it, a practice the author assures his readers was common in World War II. This technique had been widely adopted due to its enormous success and “attendant few casualties.” The overall impact of the article portrays the German panzergrenadiers as primarily a shock force. As such cavalry analogies highlight the article’s discussion, “the grenadier attacks like the cavalryman of old firing his weapons as he moves,”¹² and “in many ways, it seems that the traditional mission of the hussars has been taken over by the Bundeswehr’s panzergrenadier.”¹³

The use of history in the article is extraordinarily dubious. Simpkin’s earlier comment on panzergrenadier doctrine is correct. There was no mass use of armored personnel carriers by the Wehrmacht in the pseudo-shock cavalry role that the article writer suggests. Yet in just this way was the rank and file of the U.S. Army introduced to a new fight-from-your-vehicle-on-the-move-doctrine.

By 1975 the Army merged the Mechanized Infantry Combat Vehicle (hereafter MICV) program and Cavalry Fighting Vehicle program. This combination remains controversial among observers of cavalry doctrine, but its timing gave a strong impression that a MICV would finally come to fruition. The merger also provided evidence to Congress that the Army was attempting as best it could to contain costs of development when possible. Although the MICV program would actually suffer temporary cancellation by budgetary fiat in 1978, this combined requirement did give substantial momentum to seeing the program through.¹⁴

On the doctrinal front, in 1975, a member of the Directorate of Combat Developments in the U.S. Army Infantry Center at Fort Benning authored an article in *Infantry* magazine titled, “Mounted Combat.” This article was more than the normal

update on MICV capability that usually appeared in the 1970s. In it the panzergrenadier idea is again stressed. The capacity to shoot on the move, however, is explicitly linked to the ability of the squad to fire small arms through firing ports--a full one-third of the article being taken up with the significance of this ability.¹⁵

Again at this remove the exact paper trail of the Bundeswehr influence is difficult to trace. Presumably contacts in NATO were numerous enough that many American officers had meaningful formal and informal contacts with their Bundeswehr counterparts. When Bundeswehr Major General Fritz Birnstiel wrote an article for Infantry magazine in 1971, he certainly emphasized the preference for attacking while mounted and accompanying the tanks onto an objective. He was also very thorough in enumerating a comprehensive list of situations wherein this preference could not be followed and the infantry would have to dismount. Also, significantly, rather than claim the tank was the decisive weapon within a combined arms team, as senior American leaders would in the 1970s, Birnstiel was far more precise. For the Germans the tank was the best defense against a strongly armored enemy.¹⁶

What is implied in Birnstiel's article and made explicit within prior and current German operations manuals is that the Bundeswehr requires armored infantry to possess a specific characteristic far more important than the techniques it uses in various situations. The essential role of Panzergrenadiers is "characterized by the rapid alternation between mounted and dismounted combat."¹⁷ German mechanized infantry doctrine focused on a quality--a characteristic of flexibility which described mechanized infantry's unique contribution to the fight.

Again, it is true that Bundeswehr doctrine spoke of instances where the squads would fight on the move. But they seem to be instances only and not an overwhelming preference. For the German Army, even in their current 100/100 manual, what primarily distinguished mechanized infantry from other types is the rapidity with which it can transition from mounted to dismounted combat and back again.¹⁸ U.S. writers seem to have missed this nuance. This is unfortunate as no more succinct useful doctrinal concept is available for describing the primary characteristic of mechanized as opposed to other types of infantry. A concept for articulating the most unique aspect of mechanized infantry--its flexibility in exploiting both mounted and dismounted action--was to be absent in U.S. Army field manual writing on the subject.

As has been mentioned World War II experience-based opinion did arrive at a consensus on requirements for a better vehicle in which to transport armored infantry. However, it is important to note a credible dissenting view in the development of the infantry fighting vehicle. Richard Ogorkiewicz offers a critique that military organizational change is often a reaction to technological innovation rather than based on a doctrinal understanding of battlefield requirements. As such he takes a particularly dim view of the increased development of infantry fighting vehicles initiated by the Soviet fielding of the BMP-1.¹⁹ For Ogorkiewicz the IFV is a sort of interloper that overly complicates tank-infantry cooperation. He points out that many of the roles armies expect their IFVs to perform are better performed by tanks, to include providing suppressive fire for dismounted infantry.²⁰ Ogorkiewicz's view is germane as he was frequently published in professional journals during the period of American IFV development.

In 1973, around the time the above mentioned articles were being written, the U.S. Army created its Training and Doctrine Command. The Combat Developments Command which it absorbed had traditionally provided historical studies and, for want of a better phrase, historically based doctrinal research, research that could uncover the history of ideas within the military art. Essentially this organization disappeared and nothing like it was resurrected until the Combat Studies Institute (CSI) at the Command and General Staff College in 1979. Regrettably, it is arguable to what degree the Army has used CSI to inform force and doctrinal development even to this day.

The elimination of broad historical research was a contributing reason why the post-Vietnam resurgence in American mechanized doctrine was not in its essence a combined arms maneuver-focused doctrine, but instead used the concept of a single decisive weapon, the tank, as its organizing principal. Allied with a focus on technology the army began to articulate the essence of combined arms as the application of the firepower of different systems. The comment by the chief of the armor branch in 1983, “The M1/M2/M3/AAHfire support interactions are the guts of combined arms,”²¹ is a revealing and typical statement of this mindset. The word “infantry” is conspicuous in its absence.

Soviet Doctrine: Strategic Operational and Tactical Consistency

For several years Soviet mechanized doctrine existed within a paradigm that assumed that in a war with the West the belligerents would cross the nuclear threshold--not possibly or probably but would. The aim of Soviet military strategy was to deter the surprise nuclear attack that the world’s imperialist forces would otherwise unleash on both the Soviet Union and her socialist allies.²² It is largely irrelevant how many Soviet

leaders actually believed this, but it is enough that this account effectively summarizes the main lines of expressed Soviet military doctrine in the early Khrushchev era.

The Soviets did not see nuclear war as likely only in the conditions of a World War III. They placed the nuclear trigger not just in the context of direct attack on the Soviet Union. This attitude was not an early, neophyte reaction to the introduction of nuclear weapons. Writing as late as 1968 Marshal of the Soviet Union Matvey V. Zakharov noted that a nuclear battlefield would come about in any escalating conflict that originated in client states of Russia or “the imperialists.”²³

For ideological and fiscal, as well as what they thought pragmatic, reasons, Nikita Khrushchev’s Soviet Russia focused on nuclear rocket forces as the decisive element in war.²⁴ This is evidenced in public speeches and public policy articles by both political and military figures of the era.

Despite the starkness, uniformity, and developed nature of these Soviet ideas, some Western military analysts at first found it difficult to accept Soviet notions of the dominating influence of nuclear war for the development of doctrine. The synergy created between Soviet Russia’s security concerns and its adherence to Marxist techniques partly explains why they embraced the nuclear battlefield as the organizing principal for their military doctrine. Strange as this ideological focus may seem to most Western ears it played an essential role in the development of the BMP and hence as a catalyst to the American equivalent vehicle.

Communist Russia and not Western intellectuals of the 1990s coined the term Revolution in Military Affairs (RMA). Soviet policy makers, after they were freed from having to praise Stalin as the greatest military leader of all times, perceived the

triumvirate of atomic bombs, advanced rocketry and effective guidance systems as a genuine revolution in military affairs. For them this revolution was as profound as the advent of gunpowder let alone mechanization. Much of this willingness to perceive a revolution in military affairs derived from their orthodoxy in the matter of Marxist-Leninist dialectical method. For the Russians, a doctrinal focus, albeit one incubated in the opaque world of Hegelian dialectic imbedded in Marxist-Leninist scientific method, was essential. For them, only a Marxist approach could possibly provide scientific substantiation for the armed forces they brought into being. In American eyes this could only appear as obtuse dogma. However, regardless of the sometimes stultifying nature of the Russian method it did produce a comprehensive view of the means and ends of Soviet national security concerns. Because the advent of nuclear weapons was a revolution in military affairs, it provided both a conceptual framework and an institutional motivation to drive the design and new equipment fielding of Soviet mechanized infantry. Further, the Soviet approach placed subsequent force development in an explicitly doctrinal framework.²⁵ That framework, unlike the American, was not obsessively focused on weapons systems effects.

This doctrinal framework derived its authority from the highest levels of Soviet government and Communist Party authority. Typical expressions of that authority are statements by General Major Svatoslav N. Kozlov in a military journal in 1964,

An enormous role in the development of Soviet military science. . . . was played by the decisions of the. . . . Congresses of the Communist Party of the Soviet Union. . . . and also reports and speeches of N.S. Khrushchev. . . . All this served as a basis for broader and more bold research on many problems of Soviet military science, especially those connected with the revolution in military affairs.²⁶

This predominant nuclear focus provided the Soviet military with a rationale for a major build up of forces. This rationale provided the seeds for a doctrine with prior approval by a government and single-party system, a party that claimed it had already laid the foundation for the Army's statements of its requirements. Nothing could be more unlike the experience of an American Army that would turn away from the turmoil of Vietnam only to find a developed and fully-government-supported Soviet mechanized doctrine knocking at its door. In a draft memorandum addressed to the Chief of Staff, DePuy would write in 1975,

the Army has always had a difficult time explaining just why it needs a particular weapons system and even more difficulty in explaining how that particular weapons system fits in with all the other Army systems and organizations. . . . Our civilian masters find it most difficult to follow our logic and understand our case for a particular system.²⁷

Doubtless Soviet generals and admirals had their own difficulties in justifying weapon systems. But comparing DePuy's admission of institutional inarticulateness with Kozlov's certitude does indicate the consistent link between Soviet national security doctrine to operational doctrine and force development. The contrast could not be more striking. On the Soviet side we see a doctrinally-based foundation for battlefield requirements linked to national strategy. Again, unlike American efforts of the same period, this doctrine does not give the appearance of copy-cat reaction to an opponent's technological development. On the American side we see DePuy's lament reflecting an Army having to struggle to articulate its needs without the same national strategic doctrinal rationale the Soviets spent so much time discussing.

It would be misleading to leave the impression that Soviet mechanized forces had no difficulties. While the U.S. Army struggled through its Pentomic Division episode the

Soviet conventional forces endured a comparable exaltation of the Strategic Rocket Forces. This parallel, however, is not entirely apt, as the Soviets retained a healthy respect for the role of other arms, requiring them, however, to adapt to the nuclear battlefield. Khrushchev's 1961 comment, for example, that bombers were "obsolete" had far more to do with downsizing conventional forces in order to pay for expansion of the Strategic Rocket Forces than any coherent denial of the utility of traditional airpower.²⁸ All other arms had to be compatible with the nuclear context in order to survive. Out of this survival of what was still useful prior to the nuclear revolution in military affairs, the Russian *boyevaya mashina pyekhota* (infantry combat vehicle) or BMP was born.

Challenge and Chain: The BMP

The BMP and the motorized infantry battalions it equipped were designed to pass the Soviet doctrinal litmus test of survival on the nuclear battlefield. A military concept or force structure program, to be taken seriously in the Soviet Union between 1955 to at least 1968, had to, in turn, deal concretely with the problem of functioning within a radiologically contaminated battlefield. This requirement to operate in a nuclear battlefield spawned two specific requirements for the mechanized infantry's vehicle. The first was enhanced crew protection from residual radioactivity which the BMP's steel enclosure and later models' over-pressurization provided. This protective requirement generated a second need, the requirement that the squad be able to fight from within the vehicle. The BMP, with its small arms firing ports, antitank missile and seventy-three-millimeter smoothbore gun met this requirement. This Soviet requirement was, in fact, not analogous to the German requirement mentioned in the previous chapter. The Soviets wanted their mechanized infantry to be able to fight while protected within a radiation-

resistant enclosure, not to fight while moving per se. There is also evidence that they viewed BMP-equipped infantry's ability to place dismounts in the rear of an enemy's operational depth as a significant capability.²⁹

This capability is connected to Soviet notions of Deep Battle that are effected at the tactical level by a mix of offensive and defensive action that defies narrow specialization of the arms. The Soviets knew that it made no sense to create a specialized armored infantry that would not be required to seize or hold positions. They readily envisioned using BMP-equipped infantry to seize "centers of resistance," and "strongpoints" in the depths of an enemy's defense.³⁰ This provided an impetus within the Soviet Army to always view mechanized infantry as an inherent element of deep penetrating attacks. The idea that mechanized infantry should be confined largely to assisting the forward momentum of tanks was not compatible with Soviet notions of Deep Battle.

Mechanized BMP-equipped infantry had to possess the capability to move rapidly through a contaminated environment. In a military professional article written as late as 1976 General Colonel Viktor Merimskiy would claim,

It is well known that an attack in BMPs is made in those cases where the enemy's defenses have been reliably hit by a nuclear weapon. When attacking using conventional systems, the motorized rifle subunits normally attack the enemy on foot.³¹

Here we see the Soviets did believe in a capability for squads to shoot on the move, but primarily when nuclear strikes had already pulverized the enemy. It is interesting to note that many of the issues impacting American mechanized development are largely absent in Soviet comments. This is related to both the Soviet immersion in nuclear warfighting and the aggressive role envisioned for mechanized infantry. Still, not apparently until

about 1967 did the Soviets even begin to give doctrinal expression to the possibility “in certain circumstances of conducting combat actions without the use of nuclear weapons.”³²

To be sure Soviet mechanized doctrine perceived the role of the BMP-equipped infantry as exploiting a success against the enemy by rapidly attacking into the depth of his battlespace.³³ Their doctrine also focused on creating conditions for a so-called encounter battle. This fight would find a repositioning defender still moving as highly mobile Soviet forces overwhelmed them prior to the defender being able to establish a defense.³⁴

Too much however, has been made by some writers on the change in doctrine supposedly evidenced in the Soviet “Dnieper” exercise of 1967. House,³⁵ Simpkin,³⁶ and Dyster all suggest these exercises signaled a return to more conventional operations and operational art stemming in a line from Tukhachevskiy to Zhukov. Contra this position, William and Harriet Scott provide a persuasive argument, derived from Soviet primary sources, as to why this was not the case and that some have overlooked the significance of the fact that only the initial stage of the exercise was nonnuclear.³⁷ In support of the Scotts’ view it is significant that Merimskiy’s almost casual reference to the link between nuclear war and the BMP’s ability to allow infantry to fight while mounted occurs almost a decade after the Dnieper exercise.

Of course, a breakthrough is a breakthrough, and Soviet views of maneuver warfare exploitation into the depth of an enemy’s formations would possess some similarity whether the breakthrough was created by conventional or nuclear means. But the speed and operational depth first espoused by Tukhachevskiy was now necessary for

two reasons intimately tied to the nuclear battlefield. The first was the need to strike deep not only to destroy conventional forces but also to eliminate enemy nuclear delivery systems. The second was to achieve victory before the politicians of the west could decide to employ nuclear weapons.³⁸

Regardless of the nuclear question the West was unprepared for the November 7, 1967 debut of the BMP-1. Dyster views it as the Soviet declaration of an “intention to prepare for a type of armored war the Americans were ill-equipped to fight.”³⁹

Still, it must be admitted that, in the advent of the nuclear age, Soviet combined arms doctrine seems to have at first deteriorated and actually focused on tank-heavy units as a fixing force and the firepower of tactical nuclear weapons as the deep striking force. This created a seeming paradox of having the most massive example of firepower the world had ever seen--nuclear weapons--play what had been a maneuver role.⁴⁰

The Soviets initially reasoned that the rocket delivery of nuclear weapons was equivalent to their prior concepts of striking into the operational depth of the enemy. Contemporary with these views (1950s) the opposite relationship between tank forces and nuclear weapons also held sway. In this view, most forcefully represented by Marshal of Armored Forces A. Kh. Babadzhanyan, the nuclear device created the breakthrough and the tank-heavy force exploited it.⁴¹

By the early 1960s, however, Soviet operational notions had moved beyond such essentially facile reactions to the nuclear age. The Soviets did so by returning to both their roots in Tukhachevskiy’s doctrine and their practice from World War II, while yet maintaining an integration of tactical nuclear weapon use as the Scotts’ suggest. One of the hallmarks of the retooling, however, was the increased importance of motorized rifle

formations in Soviet thought. Indeed rifle formations--the Soviet mechanized infantry--received priority in demand for equipment.⁴² While the Soviet Army produced numerous vehicles to mechanize their entire infantry force, up to and including their airborne infantry, it would take them fifteen years to produce a successor to the T-62 tank.⁴³ Vehicle procurement and development centered on infantry formations not tank units. Even more telling is the increasing ratio of mechanized infantry divisions to tank divisions in the Soviet force between the early sixties to mid seventies. In the early 1960s the ratio was 1.8-to-1 in favor of mechanized infantry to tank divisions, by 1974 this ratio increased to 2.2-to-1.⁴⁴ This overall trend in division strength was matched by a balancing of tank to infantry within both types of divisions similar to the common assessment of most armies by the end of World War II.

As a brief aside the current ratio in the U.S. Army is approximately 1-to-1 based on raw numbers of battalions. However, this 1-to-1 ratio in battalions was originally predicated on larger, normally eleven to twelve man squads only two of whose members, at most, were required to man the vehicle once the squad dismounted.⁴⁵ The Bradley as it was first fielded was occupied by a nine man squad a full three members of which were, experience proved, required to man the vehicle after squad dismount.

The Operational Significance of Soviet Mechanized Infantry

What then was Soviet doctrine in the use of their better-resourced mechanized infantry? By 1975, in Soviet terms, their military literature referred to an "all-arms concept" which was centered on the action of mechanized infantry formations in the operational depth of the enemy.⁴⁶ To be sure the mechanized infantry also had the role of providing the necessary combat power to create a breakthrough for echeloned forces. But

in a doctrinal usage that might seem counter intuitive to the tank-centered disciples of maneuver warfare the deep penetrating force needed to possess ample mechanized infantry.

In the 1980s Simpkin was suggesting, based on his reading of then-current Soviet military literature, even that paragon of armored exploitation, the Operational Maneuver Group, (OMG) contained significant mechanized infantry. In this view the fact that a Soviet Army commander might base his OMG on a tank division all but required infantry augmentation for the OMG.⁴⁷ To avoid the nuclear trigger and to further the disruption of enemy forces in depth, Soviet literature and practice contained a depth of integration in tank-infantry tactical employment.

The Soviet desire to catch NATO forces in an encounter battle also placed a high priority on speed. That priority not only drove the Soviets to mechanize all their infantry formations, it prompted them to make those infantry formations capable of both creating and exploiting breakthroughs in enemy defenses. That exploitation also imagined using the infantry-heavy formations to occupy terrain that compromised an enemy defense or impelled him into an ill-advised counter attack.⁴⁸ This seizure of position within the operational depth of the enemy is essentially a turning movement. This movement, though part of an offensive action, requires the creation of a positional defense. As a result no Soviet writer, or commentator on the Soviets, would argue, as American writers would after the introduction of the American infantry fighting vehicle, that “regular” mechanized as opposed to IFV-equipped armored infantry was also needed to hold or seize positional defenses.

The American fielding experience with the IFV posed immediate problems in regard to numbers of infantry. The Soviets perceived a similar problem--a lack of infantry within mechanized formations to perform infantry intensive tasks--and solved it by adding more infantry to their formations.⁴⁹

Many Western voices would bemoan the lack of protection for the American IFV as virtually "criminal."⁵⁰ The Soviet approach, however, was to accept risk in the design area of protection and recapitalize even more on surprise and speed. As Soviet General of Tank Troops Lieutenant General A. Bondarenko would put it in 1975,

In order to employ effectively small units equipped with BMP, it is necessary to appreciate that such maneuverable small units. . . . are designated for daring raids into the depths of enemy defenses with the goal of circling around their strongpoints and exiting on the defender's flanks and rear.⁵¹

It is, quite frankly, impossible to find a senior American officer who would speak the same way about Bradley-equipped infantry.

Dominated by their desire to function on a nuclear battlefield, placing a reliance above on all on mass and speed, and consistent with their historical doctrinal focus on simultaneous attack throughout the depth of the enemy's formations, the Soviets carved out a premiere role for mechanized infantry in offensive operations. Faced with the limited squad strength compelled by the space limitations of the BMP, they increased the number of both infantry divisions in their force and infantry battalions in both their tank and motorized rifle divisions.

American Doctrine From the Shadow of Vietnam

No one played a greater role in the post-Vietnam American attempt to revive a mechanized infantry doctrine than General William DePuy. This revival, however, was

firmly ensconced in DePuy's viewpoint that infantry-intensive wars like Vietnam were an anomaly. Tanks, for DePuy, were the decisive element on the battlefield, and armored infantry's function was to assist the forward momentum of tanks and perhaps occasionally attack enemy positions the tanks had by-passed. DePuy was, and is, hardly alone in this view. It is important to point out then, that, while DePuy's work can in some measure be seen as a rediscovery of the need for an official mechanized doctrine he was a convinced adherent of the centrality of weapon systems for doctrinal development. Subsequent pages will seek to establish that weapons system centrality in DePuy's thinking as well as reveal many of its enduring effects.

This negative statement on DePuy's influence possesses parallels with the heated but fertile controversy launched in the U.S Army upon the publication of the Army's first post-Vietnam enunciation of doctrine, the 1976 version of FM 100-5. One of the most persistent criticisms raised immediately at the time was that the new doctrine was typical American firepower, attrition based rather than a doctrine of maneuver.⁵² The supporting tactical notion in this firepower, attrition-based doctrine is that of a weapon-systems approach rather than one with a genuine focus on historically based doctrinal research. Organizations forget. And during Vietnam no one in the U.S. Army Infantry branch with enough force behind them articulated the place of mechanized infantry in the Army's combined arms doctrine. That lapse of course had much to do with the infantry's understandable focus on the war in Vietnam, with all it entailed for a less intensive (although still useful) role for mechanized infantry.

It is necessary at this point to balance what will obviously be a somewhat negative view of DePuy's influence on the re-equipping of mechanized infantry after Vietnam.

The context in which DePuy operated called for focusing the Army in a decisive manner. As he sought to meet that challenge, alternate views and solutions were, all too frequently, either not well thought out or too ephemeral. Many also failed to address the probable American scenarios in Europe, the Middle East, and Korea. At the time of DePuy's assumption of command at TRADOC, the Army had received two successive shocks-- the defeat in Vietnam and the unexpected lethality of the modern battlefield evidenced in the 1973 Arab-Israeli War. DePuy's legacy in training doctrine, articulation of Army requirements, tactics, and leader development are considerable contributions to the U.S. Army. Further the tension between firepower and maneuver-based doctrines often appears as more of a false dichotomy than self-styled maneuver theorists might allow.⁵³ As DePuy stated in partial response to critics who accused him of being an attritionist, "maneuver warfare is not a doctrinal choice, it is an earned benefit."⁵⁴

Still, the often time schizophrenic⁵⁵ nature of the U.S. Army's post-IFV doctrine on mechanized infantry has much to do with DePuy's approach, methods, and emphasis on weapon capability. While this study would certainly not suggest weapon capability is unimportant, it will make a case that historical research into the preexisting doctrine should drive the weapon system procurement process more than it does. Further it will claim that TRADOC's "Concept Based Requirements" system did not prioritize historically (combat experience based) doctrinal concepts as the engine for weapon development.

Observers at the time viewed the 1973 Arab-Israeli War as a watershed of military history. As a result of the emergence of antitank guided missiles and the high loss rate of tanks, military analysts announced the death of the tank for what seemed like

the sixth or seventh time since World War II. That the tactics employed in the early Israeli all-tank attacks against the Egyptian bridgeheads were less than optimal weighed little compared to a new weapon system debut--the antitank guided missile.⁵⁶

Both the U.S. and Soviet armies went through an intensive post-mortem on the lessons of the 1973 war. One purported lesson of that war was a reemergence of the need for combined arms tank-infantry co-operation. This should have been, but frequently was not, matched with a revalidation of the optimal 1-to-1 tank-infantry battalion ratio that observations from the conclusion of World War II so forcefully dictated. In the U.S., the 1973 war served as a catalyst for DePuy's charter to revise the American Army's doctrine. Regrettably for the U.S. mechanized infantry, the 1973 war did not forge a firm combined arms focus. One sees only grudging admission on the part of DePuy in, "the tank cannot do it alone."⁵⁷

Doubtless the Arab-Israeli War and DePuy's work helped motivate the U.S. Army to make enormous strides in both training and equipment acquisition. In the midst of that progress it might seem counter-intuitive to suggest that the ultimate outcome did not reflect a combined arms approach. Yet John L. Romjue, for many years the TRADOC historian, notes that dissatisfaction with the 1976 version of FM 100-5 was largely crystallized around complaints that the 1976 FM was flawed because it was inspired by, "force ratio and firepower based battle views that had been prominent in the 1970s. . . . the Central Battle depiction of combat power in terms of targets to be serviced suggested a mechanistic approach."⁵⁸

Evidence of a firepower-based battle view in DePuy's work includes the inclusion of detailed weapons effectiveness charts in the 1976 FM 100-5 for which he was largely

responsible. DePuy spoke proudly of the fact that the German Army was adding this section to its own doctrinal manuals. Nothing makes clearer DePuy's weapons-centered, firepower-focused approach than this excerpt from a letter he wrote to Chief of Staff Fred C. Weyand in 1976.

In the past, the Army has been characterized by large formations of men equipped with the weapons which would facilitate the accomplishment of the unit mission. Now, we are at or very, very close to the point in which we must organize the Army to employ and maintain the modern weapons which can drive the outcome on the battlefield. Thus, we started FM 100-5 with a rather long discussion of weapons--weapons effectiveness trends--and implications.⁵⁹

This quote does not certify DePuy as an attrition-based firepower advocate. DePuy elsewhere explains the insight that sometimes maneuver in the operational depth may have to be fought for. In fact DePuy is suggesting something far more delimiting in the above passage. Among other things he is suggesting technology drives doctrine and not the other way around. He is suggesting it is the Army that must be organized to fit the weapon system. In such a view historically based doctrinal research or doctrinal concepts that would seek to integrate combined arms have little merit. This schema drives the Army in the direction of increasing firepower rather than designing weapons and units to optimize the various arms and produce a combined arms dilemma for an enemy force. In such a schema dismounted maneuver has no place. Dismounted maneuver is too flexible and discrete to even show up on the radar screen of the dynamic one sees in this letter.

To fully understand DePuy's influence it is important to note that he represents several cultural and doctrinal trends in Western military thinking. The debate over firepower versus maneuver reached very public proportions in the 1980s as the politics of reform clashed with the Army's legitimate desire to make up for a generation or more of missed weapon and vehicle design. A desire for which DePuy served as primary

advocate and spokesman. As such this paper contends that the publicity of this debate obscured concepts more far-reaching than the firepower-versus-maneuver debate. DePuy sought to inculcate the notion that future combined arms warfare and development needed to be almost exclusively firepower and weapon centered. DePuy and others would suggest that the notion that weapons were designed to fit the soldier was in many respects an infantry-centered archaism which the Army needed to abandon. In the future the Army would be more like the Air Force and the Navy whose efforts were more accurately viewed as investing in weapon systems and then organizing people and units around them.

This dynamic between weapons and soldiers, between equipment and the human element, is of course of major import for any claim that combat on foot remains an essential element of modern combined arms warfare. It is regrettable that a debate on the place of weapons systems in prescribed doctrine and its possible modifications to our understanding of combined arms warfare was overshadowed at the time by the somewhat amateurish furor over attrition versus maneuver.

Interestingly the letter to Weyand goes on to mention appeals to authority for why the concept of a weapon centered approach is valid. The authorities DePuy appeals to are both the German and Israeli Armies. "By the way, the German Army is lifting this part of FM 100-5 in its entirety into their basic doctrinal manuals. The Israeli Army is clearly weapons oriented."⁶⁰

While the Soviets added more infantry to their formations as a consequence of the war, the Americans added more weapons. American official lessons learned were: the battlefield had increased in lethality; the tank remained dominant but cannot do it alone;

and there exists a need to develop alternate weapons to protect both the tank and the airplane from recent developments in both ATGMs and SAMs. The effect on doctrine of asserting the tank is decisive in ground warfare vice combined arms as decisive permeated subsequent U.S. doctrinal development as seen in the 1976 version of FM 100-5.

These lessons made it all the more imperative to get a replacement for the M113 into the hands of the American mechanized infantry. A particular need was to give it a weapon system making it capable of suppressing the new ATGMs that had contributed to the devastation of pure tank Israeli armored forces in the 1973 war.⁶¹ However, it was apparent that the logical proponents of doctrine on infantry's role on the battlefield--the infantry branch--was not going to lead this search. Reflecting on it years after the fact DePuy noted,

I wanted the infantry to get away from the 2 1/2 mph mentality but they were in the hands of light infantrymen...they didn't do the mech infantry well at all. They didn't understand it...that is why I took these draconian measures with them. To shake them out of that lethargy.⁶²

DePuy's reflections on the Arab-Israeli War of 1973, as recorded in various memoranda and speeches, served to strengthen the tank-as-decisive viewpoint. So too did his focus on the admittedly valid lessons on the, for some, surprising degree to which mechanized forces proved useful in Vietnam. DePuy thought the battlefield realities made evident by the Arab-Israeli War placed the U.S. Army in a "catch-up" mode versus the Russians. This was certainly an accurate observation. In his incisive manner he commented, "Because of the cost of and preoccupation with the Vietnam war, the Army lost a generation of modernization."⁶³ Part of this modernization was to give the infantry

a vehicle whose firepower could reinforce tank firepower and help suppress antitank missiles.⁶⁴

A concern for an infantry that possessed reinforcing firepower dovetailed nicely with the Bundeswehr's requirement for more tank killing systems. These essentially unrelated doctrinal concepts; suppression of antitank missiles and reinforcing fires from armored vehicle killing systems would from 1978 to about 1986 weave together to add more weight in official literature for the infantry squads to "normally" fight mounted when in the attack. The view that mechanized infantry should normally fight mounted was articulated by at least one Chief of Infantry as early as 1980, seven years after the 1973 war and only four after the publication of the Army's new FM 100-5.⁶⁵

The Bundeswehr influence, reinforced by conclusions derived from the Arab-Israeli wars, constituted regression relative to the generally accepted doctrine that emerged toward the end of World War II. That doctrine had seen tanks and infantry cooperating in a close manner. With the IFV, armies had to struggle simply to devise effective tactics and techniques to allow infantry and IFVs to coordinate their actions, leaving little doctrinal room or training time for explicit tank foot-infantry cooperation. Still, in the case of the West Germans this regression was understandable. The challenge West Germany faced, weighing in the balance the nation's lack of geographical strategic depth with Soviet Russia's vast fleet of armored vehicles, was enormous. Western examination of the NBC-capable Soviet vehicles captured by the Israelis in the 1973 war exacerbated the challenge. Further, while the 1973 war provided evidence of the effectiveness of infantry in the defense when armed with antitank missiles, it provided

almost no effective use, on either side, of mechanized infantry in the attack or counterattack.

The IFV introduced distortions into American mechanized infantry doctrine, not as is often suggested, because there is anything wrong with the IFV itself. Rather the IFV became a catalyst for reviving simplistic concepts that have their roots in some of the earliest thinking on mechanization. These early concepts maintained a hold on the thinking of some of the U.S. Army's most senior leaders.

Writing as late as 1999, General (Retired) Donn Starry, the U.S. Army's second Commander of its Training and Doctrine Command wrote, "It is a bias that ignores the truth that the mechanization of warfare was simply a means of providing more combat power with far fewer soldiers. . . . why then did America not wholeheartedly embrace the Soldier-saving capabilities of modern mechanized technology?"⁶⁶

Starry's 1999 statement is reminiscent of the position taken by Fuller and to a lesser extent Liddell Hart between the world wars. In the original this comment takes place in the context of a discussion of the inter-war years. Starry believes historian Edward Katzenbach unfairly singles out the horse cavalry as an obstacle to mechanization in the interwar American Army. But Starry's disagreement with Katzenbach clearly serves as a launch pad for a broader and more telling statement, "Katzenbach ignored what is likely the most persistent shortcoming in American military thought: a blinding fixation on the infantryman as the centerpiece of all military action."⁶⁷

The practical experience of World War II valued the role infantry played within the mechanized fight. As has been mentioned subsequent developments, the issue of nuclear weapons for one, threatened to overturn this and imply that dismounted action

may have become not merely no longer a centerpiece, but outright obsolete. Starry's comment perhaps reveals how deep the wounds of branch parochialism and the supported-supporting paradigm, which is that parochialism's paradigm of choice, truly run. In any event the entire experience of the IFV-equipped American infantry has been one of attempting to restore capability in the dismounted force--a capability combat experience deems essential for mechanized forces. But the idea that technology embodied in a decisive weapon, should allow the diminution of infantry forces recurs in American thought on warfare. It is a trend that in all probability will never go away.

Does an increase in firepower and mechanization engender more combat power with fewer soldiers? The underlying inspiration in identifying a conflict between mechanization and infantry would seem to be the fact that with tanks fewer soldiers are required to achieve more firepower. While this is undoubtedly true it also implies that infantry's role is a function solely of how much firepower it brings to the combined arms fight. This is interesting because it simply dismisses through neglect the role dismounted maneuver may play. It is a terrain-less notion that does not even comport well with those roles armies the world over have normally assigned to mechanized infantry's dismounted element.

The general tension between increased firepower and decreased numbers of infantry will always be a theoretically tempting but tactically flawed concept. It is flawed because it derives its inspiration from generalized caricatures of mechanized warfare rather than study of the actual combat record. The concept is counter to the close cooperation of arms that combat experience has validated as a superior tactical approach. Several factors contributed to the deterioration of doctrinal concepts based on the

historical record in the American Army since the end of World War II. These factors include: a misunderstanding of Bundeswehr mechanized infantry doctrine and a desire to emulate it; a torturous development process for the American infantry fighting vehicle; an approach to advanced technology which marginalized doctrinally based historical research; and perhaps most significantly the ascendancy to positions of influence of key decisions makers who were disinclined to place much value on the action of infantry on foot. All these factors contributed to an organizational amnesia in which the historical combat record precedents were disregarded in mechanized infantry development.

The American IFV

In their efforts to develop a counterpart IFV, American planners turned to both the German experience and the Soviet threat. However, as Richard Ogorkiewicz suggests, organizational and cultural pressures caused thinking in this area to look elsewhere than battlefield realities for inspiration. By 1980 Brigadier Richard Simpkin had wryly commented that the American search for an IFV seemed to bear the marks of an “I guess we have to get one because everyone else has one”⁶⁸ mentality. This seems hardly fair to those involved as the IFV, or MICV as it was originally known, had actually been identified as a requirement as early as 1964, prior to the Soviet fielding of an IFV. Further, the Army had a dedicated mechanized infantry vehicle development program since 1958.⁶⁹

The story of Bradley vehicle development and procurement is an intense saga of continual revision and competing requirements the optimization of any one of which results in the denigration of another. However, it is also a saga of the uphill battle historical and doctrine-first approaches face in our era of massive quantifiable capability.

one's case with data made it very difficult for even program managers to apply their understanding of true doctrinal needs and concepts. One case in point will highlight this tyranny of the measurable. Several well-reasoned arguments existed around the development of the Bradley against the inclusion of firing port weapons. This paper has already discussed the true nature of the late World War II German requirement to fight while mounted. However, a 1978 Cost and Operational Effectiveness Analysis showed a mathematically modeled advantage (of course) to BFVs with firing port weapons.⁷⁰ Incredibly this advantage was in an area already made sensitive by lessons learned from the 1973 Arab-Israeli War--the ability to suppress ATGMs. The firing port stayed despite the fact that a program manager believed the effect of such weapons was so minimal and their actual employment so problematic as to be all but useless.⁷¹ Significantly, routine Infantry input, mostly by way of program milestone reviews was confined to an officer of colonel rank.⁷²

More important than the specific vehicle requirements was the nature of the focus driving the requirement. Works like the Combat Development Command's 1965 analysis of the development of the armored infantry rifle squad⁷³ were not mere laundry lists of tables of organization and equipment. They contained rich accounts of the history of doctrine and development and rendered service in preserving practical battlefield experience lessons learned. By the 1970s this work was no longer formalized and was certainly not integrated into the Army's acquisition process. Operational research and systems analysis techniques were well integrated and dominated the development landscape. Infantry branch, who would appear to be the logical entity to fill this vacuum

seemed oddly uninterested in the IFV's development.⁷⁴ The key early program managers were invariably generals with an Armor branch background.

More important than the specific vehicle requirements or the institutional peculiarities of Army weapons acquisition is the Army's failure, at the time, to clearly articulate what indispensable roles (if any) dismounted maneuver plays within the mechanized fight. This question had to be dealt with prior to determining the effective size of the dismounted portion of the squad--a requirement that in turn impacted greatly on the design of the vehicle. Perhaps no organizational issue in regard to post-IFV American infantry has caused more controversy than that of the number of effective dismounted infantry. The Bradley program tested various squad sizes. However, logical design parameters create a tight problem if the main weapon is to be effective (requiring soldiers to man it rather than perform dismounted tasks) and the vehicle maintains appropriate cross-country mobility (placing a limit on carrying capacity and protection). Even though initial Infantry School publications attempted to portray the squad as three to man the vehicle and seven available to dismount the ability to pull this off in practice rapidly disappeared.⁷⁵

Here it is important to remember the post-World-War II boards on infantry combat and the logical progression of armored infantry squad structure discussed earlier. This paper suggests that historical research into mechanized infantry structure and doctrine reveals a minimally necessary squad structure that is much more than an accident of habits or preferences. In short this paper suggests Haworth is incorrect when he concludes efforts to maintain "traditional" vehicle roles and squad structures are the most problematic element in the development of the American IFV.⁷⁶ Subsequent to

World War II, observations from observers of Bradley equipped units at the training centers argued for a robust number of infantry. Soviet use of mechanized infantry in Deep Battle doctrine argued for a robust number of infantry. Most importantly, the actual combat record of mechanized war argued for a robust number of infantry.

This minimum structure of the modern infantry squad is necessary to optimize dismounted fire and maneuver. A dismounted force with three leaders split into two teams wherein either team has both the command and control and weaponry to interchangeably provide suppression for the other--is not an accidental development.

As it became evident that Bradley-equipped mechanized infantry was going to come into the Army at less than optimal dismounted strength, numerous justifications came to the fore. First, some studies existed arguing that smaller squads, perhaps as small as seven or even five, were actually better than larger squads.⁷⁷ Their methodology had as much to do with historically-based doctrinal research as the COEA that highlighted the value of firing ports. But as the Bradley neared fielding in the late 1970s the issue of the smaller size squad apparently reached the ears of Chief of Staff General Bernard Rogers. DePuy in an apparently unrecorded conversation informed Rogers the Army needed to go ahead with the Bradley as the firepower of the Bradley would make up for the size of the squad.⁷⁸

Intellectual ammunition for this decision was available as well. A TRADOC Deputy Chief of Staff for Training and Schools study, entitled "Infantry in Mid-Intensity Battle," was completed by January 1974. Presumably it gave DePuy some additional validity for his comment to Rogers as it called for breaking the squad into a carrier team and a small dismount team. Coming out contemporaneous to the 1973 War, the "Infantry

in Mid-Intensity Battle," report heralded this new squad made of a carrier team and dismount team as an innovation that might, "enable us to reduce the infantry squad to seven or eight men and utilize vehicle capacity for additional weapons, particularly antitank weapons."⁷⁹

As has been mentioned earlier this concept makes sense only if infantry's contribution to the combined arms fight is reduced to what it adds to firepower. In this view infantry's role in the battlefield is primarily based on the vehicle firepower and mobility it adds to the fight--not a dismounted capability that compliments other arms and helps create a combined arms effect on an enemy force thus placing him in a dilemma. One can only speculate that the decision to go with a smaller squad was also a compromise for DePuy who had written a famous short study on the infantry squad. The Army could ill-afford to restart the MICV program. Too much time had passed, too many BMP-1s with the potential for BMP-2s faced American .50 caliber equipped unstabilized M113 battalions in the Federal Republic of Germany.

When the Bradley arrived in the field in the early 1980s it created a hybrid platoon/squad with which the infantry had no experience and for which it had conducted precious little analysis. The mechanized infantry squad had a mounted element that provided suppression for dismounted maneuver (among other tasks) and a dismounted maneuver element with a paper strength of six. Having twisted through a "BMP-driven"⁸⁰ process for almost twenty years and having witnessed the arrival of: German and Soviet IFVs, the late addition of swim capability, the addition of ATGM-carrying capability, and commingling with Cavalry Fighting Vehicle development in 1975, the

Bradley program delivered to the neglected mechanized infantry perhaps its greatest and still ongoing challenge.

Benning's Turn: 25 Millimeter on the Chattahoochie

The initial Bradley white paper issued by the Chief of Staff of the Army in 1986 argued that the Bradley provided the fixing force for the more maneuverable tank force.⁸¹ This type of overspecialized concept casts a shadow even today but a reading of the White Paper reveals how funding politics sometimes forms supposedly doctrinal debate.

A review of the literature from 1968 to 1980 reveals an American mechanized infantry doctrine dominated by two factors. The first was the aim of establishing a doctrine compatible with the German Army's desire for a forward defense on its international border with both East Germany and Czechoslovakia. The Germans were largely focused on the need to destroy massive amounts of Soviet tanks and armored vehicles in as fast a manner as possible in the first stages of a Soviet invasion.⁸² In the bureaucratic struggle to produce a MICV, compatibility with the Germans represented a powerful political card. Second was the drumbeat of analysis derived from the 1973 Arab-Israeli War.

Clearly the second influence, analysis of the Arab-Israeli War, was an attempt to derive requirements from battlefield realities. This would seem to somewhat dilute the criticism, offered in this paper, of a doctrine being driven too much by technology and too little by doctrinal reflection on the historical combat record. However, the method of analysis used throughout the procurement process was largely weapons-capability driven, rather than tactics driven.⁸³ While technology does influence tactics, the American approach, evidenced in studies by the Army Combat Developments Command and the

Army Operational Test and Evaluation Agency, viewed weapons systems in isolation from one another. These analytical tests and approaches tended to emphasize the IFV's capability to destroy other IFVs and vehicles and in this measure contributed to the emergence of like versus like doctrinal writing in some later field manuals. Approaches permeated with weapons effectiveness tests also left little room for doctrinal thought on the psychology of war.

Even more telling than the regression into a weapon-system approach is the struggle doctrine writers at Fort Benning had as the Bradley was fielded. The 1980 Special Text 7-7-1, The Mechanized Infantry Platoon and Squad (IFV), stated,

The more conservative thinkers will tend to regard the IFV as an improved APC or 'battle taxi.' The other extreme will think of the IFV as a light tank. The correct role of the IFV is in between these two extremes, but probably slightly more toward the light tank.⁸⁴

In the hands of practitioners the weapon-system approach discussed herein manifested itself as glowing admiration for the technical capabilities of the new Bradley Fighting Vehicle. Those who wrote about the new Bradley-equipped infantry usually record an awestruck wonder at the vast potential of the new weapon system. As late as 1986 the Chief of Combined Arms and Tactics at Fort Benning, a future Chief of Infantry, and an officer who predominantly served in light infantry would write, "It is the increase in vehicle capability and complexity that has led to fundamental changes in the way infantry does business."⁸⁵ This was undoubtedly true as far as it goes. It reflects, however, an unwittingly narrow viewpoint. It reflects, a tendency, in practice, to treat defining the role of the BFV as equivalent to defining mechanized infantry doctrine itself. This tendency arose in the thinking of enthusiast and critic alike.

While Simpkin might remark in 1980 that "the essence of combined arms at the tactical level is cooperation between tanks and infantry,"⁸⁶ others were just as likely to see the arrival of the IFV as a revolutionary event in the life of the infantry which called for revolutionary adaptation in the arm.⁸⁷ Viewing the American IFV--commonly referred to as the Bradley--as revolutionary created unintended effects. The fixation of those who should have been the proponents of mechanized infantry doctrine was often focused on the vehicle. This focus resulted in a de facto neglect of the dismounted element within the mechanized infantry. Nor was this neglect entirely unintended. Having absorbed a perhaps overly-simplistic version of German panzergrenadier doctrine, while at the same time being pushed by TRADOC to show improvement in the strictly antitank, antivehicle role, it probably occurred to many infantrymen that it was appropriate for this kind of infantry to have smaller squads.

A training and tactical focus on vehicle firepower was understandable as the introduction of the Bradley did present the infantry with training challenges it had never before faced. However, Infantry branch seems as an institution to have been either unwilling or incapable of presenting an argument for what indispensable role the infantry might or might not play within the mechanized fight. If critics like William Lind are correct, then advocates of the enduring utility of dismounted maneuver, presumably Infantry branch, should have been more involved in the process. Further, even Simpkin, somewhat inconsistently, would describe highly circumscribed roles for the mechanized infantry, roles that seemed at variance with his often stated view that tanks and infantry had to be considered coequal partners in the combined arms fight.⁸⁸

Within three to four years of the fielding of the BFV rumblings about the inadequacy of the platoon structure began to emerge. While Major General John Foss, Chief of Infantry 1985-1986, would advocate the supposed requirement to fight mounted, the latter half of his tenure saw increasing statements indicating the Army still had much to figure out about the IFV.⁸⁹

A key catalyst in compelling the Army at large to contend with the dismounted element was a 1988 memorandum from the Combined Arms Center commander Lieutenant General Gerald Bartlett.⁹⁰ Bartlett sought to focus the Army's division commanders on National Training Center observations about the underutilization and poor training of the dismounted infantry within the Bradley equipped battalions. This helped prompt several changes to Bradley platoon organization.

Successive design changes in the Bradley platoon revolved around both number of dismounted soldiers in the squad and the role of the squad leader. As to the role of the squad leader two concepts competed for attention. The first asserted the squad leader was fully capable of simultaneously commanding both vehicle and crew.⁹¹ The second struggled with the observation derived from initial field experience that the new IFV was too complicated for split attention and that, like a tank, and unlike previous armored personnel carriers, it required a dedicated sergeant-vehicle commander for effective use. Ultimately the second view won out and the result was the first redesign of the Bradley equipped mechanized platoon.

By 1988 or earlier, the Chief of Infantry, Major General Michael Spigelmire, decided to develop proposals to redress the problems units were experiencing with the Bradley platoon. A white paper, after benefiting from input from the field, was favorably

received by the participants of the Bradley Worldwide Conference in 1989. By 1990 the TRADOC commander had approved the new structure for implementation. This structure greatly reduced the amount of "seat-hopping" required when the squad dismounted by creating a mounted element of two sections with two vehicles a piece. The main rationale for the change, however, was to end the fiction of a mechanized infantry squad as consisting of a mounted team and a dismounted team. In the white paper redesign the two teams that rode inside a mounted section constituted a full nine-man squad when they dismounted. As Spigelmire put it, "The purpose behind the restructuring was to reduce the time lost in dismounting the fire teams, to improve the fire and maneuver capability of the squads, and to align the Bradley equipped mechanized infantry with the rest of the force."⁹²

It is interesting to note that this restructuring in part derived from a recognition (note time lost in dismounting the fire teams) of what, according to German doctrine, is the prime characteristic of mechanized infantry--the ability to rapidly transition between mounted and dismounted combat. This redesign provided all four Bradleys in the platoon with a dedicated NCO, who now truly became the BC or Bradley Commander. This eliminated the need for the squad leader to be expert in Bradley vehicle gunnery and tactics and teach it to others as well as be expert in the squad's tasks and teach them to others. While some officers felt this reflected a lack of confidence in the squad leaders the restructure had a deeper meaning in the context of doctrinal debate.⁹³ The prior structure technically had three six-man teams. Each of these teams, however, was meant to function in close cooperation with the other team in its squad. The other team simply happened to be a Bradley fighting vehicle. It was this arrangement which placed so few

men on foot attempting to maneuver about the suppressive fire of the BFV that Bartlett had found wanting at the Army training centers.

As has been mentioned in the eyes of many the Bradley's armament was designed to destroy other IFVs and, (with the addition of the TOW late in its development), tanks. When the Army in light of the 1973 war looked out across the Fulda Gap it seemed logical to prioritize vehicle-killing weapon systems. The consequence of this was a diminution of the role of dismounted maneuver. Interestingly enough a defense of the original structure was offered in a School of Advanced Military Studies (SAMS) monograph written in 1992. The basis of this objection was that armored infantry was specialized, and, as Wass de Czege had argued, the armored infantry's role of assisting the forward passage of tanks was viable enough to legitimate its own type of infantry.⁹⁴

By the late 1990s under Chief of Infantry, Major General Carl Ernst, the Bradley platoon structure had now been altered to provide three nine-man squads. This pushed the interior space of the vehicle itself back to the design period when developers planned to put seven men in the squad compartment--a capacity that had been made impractical earlier due to the added requirement for TOW missile reloads.

Summary

The Infantry had asked for and received a vehicle not only with the capability to shoot on the move but for the squad carried within it to also shoot on the move while remaining under cover. Firing ports became a major issue to ensure this capability and were a dominant topic in several professional articles on mechanized infantry. The Germans had set the precedent of arming their first IFV's with a 20-millimeter cannon, and the American IFV possessed a 25-millimeter cannon. The initial design of the

Bradley squad had followed the early German establishment--part of the old-style squad was permanently absorbed into crewing the vehicle. Once fielded, Infantry branch responded to complaints and observations from the training centers, the gist of which was that Bradley-equipped infantry was unable to perform necessary dismount tasks. It is no understatement to suggest that once Bradleys were fielded in 1983, Infantry branch spent the next seventeen years working on fixes to doctrine-technology mismatches that it bore considerable responsibility in having allowed to come about.

The role of mechanized infantry tended to be reduced to the definitions of the roles of the vehicle. DePuy, for one, certainly perceived the essential role of the IFV not primarily as a suppressive weapon to assist dismounted maneuver but as a rapid-fire cannon to supplement higher caliber tank fires on a battlefield saturated with Soviet vehicles and antitank guided missiles. Within this emphasis, and the isolated weapons system approach already noted, lay the seeds of a tactical application that undermined combined arms doctrine--it resulted in a view that like should fight like. This view was not articulated at a macro-doctrinal level in the American Army but it certainly invaded the writing of mechanized infantry Field Manuals. The 1987 and 1988 versions of Field Manuals 7-7J, 71-1, 71-2, 71-3, and 71-123 (1992) all discuss the role of dismounts, tanks, and BFVs in their defensive doctrine as primarily a fight of like systems versus like systems. Missing from this characterization of mechanized warfare is a combined arms doctrine that argues for the use of multiple arms the simultaneous application of which places the enemy in a dilemma. This dilemma is well articulated in the 1982 version of FM 100-5, "*Complementary combined arms should pose a dilemma for the*

enemy (italics original) as he evades the effects of one weapon or arm he places himself in jeopardy of attack by another.”⁹⁵

Continuing Issues

Simpkin and others have noted how modern tanks have become more specialized. They have, according to this line of thought, become focused on killing other tanks and have drifted away somewhat from the exploitation role they were originally envisioned for. In light of this tank specialization, along with higher calibers of main gun and a concomitant reduced amount of on-board rounds, some view the IFV’s cannon as a genuinely complementary rather than merely supplementary aide to tanks. Such an approach, however, confuses increased firepower with combined arms. It is inspired by the type of weapons-performance focus that became such a large part of the already-discussed U.S. Army doctrinal thinking in the 1970s. For the cannon firepower of the Bradley to have a complementary effect, the Bradley would have to be able to maneuver its firepower into areas inaccessible to tanks. In fact the Bradley is capable of this to a limited degree. It can handle narrower passages and steeper grades than the M1 Abrams tank and weighing less can negotiate some terrain and bridges with less chance of miring or collapsing the bridge than the tank. But the opportunity for this maneuverability is probably somewhat limited.

If the incessant redesign of the Bradley platoon means anything, it argues for the requirement for mechanized infantry having the capacity to conduct foot-based fire and maneuver within the mechanized fight. That foot-based fire and maneuver requires a certain amount of infantry--an amount probably best left to the historical studies on squad size to sort out. What mechanized warriors can rightly demand, however, is that the

infantry never slow the mechanized fight to a reduced pace unless circumstances of terrain or enemy absolutely demand it. The Germans, far from focusing solely on fighting on the move, always stressed and continue to stress the need for mechanized infantry to be able to rapidly transition between mounted and dismounted fighting. At first glance this may seem a function of speed. In fact the ability to dismount close to a combat location, thus avoiding a long slow foot pace approach to the fight, is far more important. This would imply that even for the specialized armored infantry suggested by Simpkin, Wass de Czege, and others, protection is the most important vehicle characteristic, as protection, more than any other characteristic, allows the dismount point to be closer to the action.

But this leaves the open question, or rather challenge, a question that has been open since the mid-1980s when it was first explicitly raised. Should armored infantry constitute a specialized type of infantry? Should armored infantry be differentiated from not only light forces but regular mechanized infantry as well? There is evidence that in fact armored as opposed to mechanized infantry does exist. The early German Spz 12-3 equipped and initial Soviet BMP-1 equipped formations stand as examples. The question remains, is such specialization warranted or effective?

Some Chiefs of Infantry at Fort Benning are on record that there is one infantry with five different types. The five types are mechanized, airborne, air assault, light, and Ranger. Other Chiefs of Infantry have tended to stress the commonality of all U.S. Army infantry formations, suggesting any difference is primarily in means of transportation on the battlefield. At one time in the late 1980s Major General Kenneth C. Leuer moved in the direction of separate field manuals for the light as opposed to airborne, air assault,

and standard infantry. This separate series of light infantry manuals did not endure into the 1990s as the criticism that it represented unnecessary overspecialization gained force. No matter which way the pendulum swings on the issue of types of infantry it reflects the branch's need to articulate both the commonality and diversity of infantry structure, capabilities and missions on the battlefield. Leuer's light infantry series of manuals is an example of doctrinal diversification the Army rejected. On the other hand the sub-proponency for air assault tactical methods enjoyed by the commander of the 101st Air Assault Division is an example of the Army's acceptance of doctrinal diversification. The air assault division diversification recognizes different characteristics for types of infantry. Along these lines few would disagree that a fault line between mechanized infantry and other types comprises an obvious difference in capability, a difference significant enough to call for its own doctrine. Advocacy of special doctrinal consideration for mechanized infantry normally does not provoke criticism of unnecessary specialization. Mechanized compared to nonmechanized infantry forms a valid demarcation between at least two types of infantry. The question remains if modern developments indicate the infantry branch should envision more than two types for doctrinal purposes.

¹ Gorman to DePuy, Memorandum, 3 July 1974, THO in Paul H. Herbert, *Deciding What Has to Be Done: General William E. DePuy and the 1976 Edition of FM 100-5, Operations*, Leavenworth Papers Number 16 (Leavenworth, KS: Combat Studies Institute, United States Army Command and General Staff College, 1988) 44.

² Ibid., 88-89.

³ For an excellent, succinct discussion of the 1950s dominant emphasis on nuclear war and its effect on conventional force structure see Dyster, 400-411.

⁴ Macksey, 245.

⁵ Glenn H. Snyder, "The 'New' Look of 1953," in Warner R. Schilling, Paul Y. Hammond, and Glenn H. Snyder, *Strategy, Politics, and Defense Budgets* (New York: Columbia University Press, 1962).

⁶ Dyster, 421.

⁷ Robert A. Doughty, Leavenworth Papers Number 1 *The Evolution of US Army Tactical Doctrine, 1946 - 76*, (Leavenworth, KS: Combat Studies Institute, United States Army Command and General Staff College, 1979), 16.

⁸ For the most celebrated example of this see, B. H. Liddell Hart, *The Other Side of the Hill: Germany's Generals, Their Rise and Fall, With Their Own Account of Military Events 1939 – 1945* (London: Cassel and Co., Ltd., 1948).

⁹ Secretary of Defense Charles E. Wilson, quoted by Maxwell D. Taylor, in *The Uncertain Trumpet* (New York: Harper and Bros., 1959) 51.

¹⁰ Richard Simpkin, *Mechanized Infantry*, 30.

¹¹ Haworth, 141.

¹² Lowell A. Aiken, "The Panzergrenadiers Roll Again," *Army*, February 1964, 39.

¹³ Ibid., 40.

¹⁴ Haworth, 129.

¹⁵ Jeff F. Cherry, "Mounted Combat," *Infantry*, September–October 1975, 12-15.

¹⁶ Major General Fritz Birnstiel, "German Combat Troops in Action," *Infantry*, Nov-Dec 71, 27.

¹⁷ See Birnstiel, 27 and Federal Minister of Defense, "Army Regulation 100/100 Command and Control of Armed Forces," (Bonn: The Federal Minister of Defense, 1987), 4-9.

¹⁸ Ibid.

¹⁹ Ogorkiewicz, Richard, "Mechanized Infantry," *Military Review*, August 1974, 71.

²⁰ See Ogorkiewicz's comparison of MICV versus tank, Ibid.

²¹ Major General Frederic J. Brown, “Commander’s Hatch”, *Armor*, January–February, 1983, 5.

²² Rodion Ya. Malinovskiy, “Address to the Fourth Session of the Supreme Soviet,” in *The Soviet Art of War: Doctrine Strategy and Tactics*, ed. Harriet Fast Scott and William F. Scott (Boulder, CO: Westview Press 1982) 165-166.

²³ Matvey V. Zakharov, *50 Years of the Armed Forces of the USSR* (Moscow: Voyenizdat, 1968), 522-525, in, *The Soviet Art of War: Doctrine Strategy and Tactics*, ed. Harriet Fast Scott and William F. Scott, 178-179.

²⁴ Nikita S. Khrushchev, *On Peaceful Coexistence* (Moscow: Foreign Languages Publishing House, 1961), 148-151, 160-163.

²⁵ See, *The Soviet Art of War: Doctrine Strategy and Tactics* ed. Harriet Fast Scott and William F. Scott (Boulder, CO: Westview Press 1982), 123, 131 and 258.

²⁶ Ibid., 148-149.

²⁷ William E. DePuy, *Selected Papers of General William E. DePuy*, comp. Richard M. Swain (Leavenworth, KS: Combat Studies Institute, 1994), 143.

²⁸ *The Soviet Art of War: Doctrine Strategy and Tactics*, ed. Harriet Fast Scott and William F. Scott, 148-149.

²⁹ Dyster, 477-499.

³⁰ Viktor A. Merimskiy, “The BMP in Combat” *Military Herald*, in no. 3, March 1976, 19-22, in *The Soviet Art of War: Doctrine Strategy and Tactics*, ed. Harriet Fast Scott and William F. Scott, 285.

³¹ Ibid., 286.

³² *The Soviet Art of War: Doctrine Strategy and Tactics*, ed. Harriet Fast Scott and William F. Scott, 207.

³³ Ibid., 284.

³⁴ Dyster, 439.

³⁵ House, 145-146.

³⁶ Richard Simpkin, *Deep Battle: The Brainchild of Marshall Tukhachevskii* (London: Brassey’s Defence Publishers, 1987), 267.

³⁷ *The Soviet Art of War: Doctrine Strategy and Tactics*, ed. Harriet Fast Scott and William F. Scott, 161, 178-179.

³⁸ Richard Simpkin, *Deep Battle: The Brainchild of Marshall Tukhachevskii*, 68-69.

³⁹ Dyster, 441.

⁴⁰ Richard Simpkin, *Red Armour* (Oxford: Brassey's Defence Publishers, 1984), 144.

⁴¹ Ibid., 150-151.

⁴² Dyster, 475.

⁴³ Ibid.

⁴⁴ Philip A. Karber, "The Soviet Antitank Debate," *Armor*, Vol. LXXV, No. 6, Nov-Dec 1976, 12.

⁴⁵ Virgil Ney, *The Evolution of the Armored Infantry Rifle Squad*, (Fort Belvoir, VA: United States Army Combat Developments Command, 1965) 51.

⁴⁶ This is not to suggest that in the Soviet view mechanized infantry is the decisive arm, rather it shows its offensive potential as part of a combined arms team rooted in Russian large scale cavalry traditions and Tukhachevskiy's work, see Simpkin, *Deep Battle: The Brainchild of Marshall Tukhachevskii*, 70.

⁴⁷ Simpkin, *Red Armour*, 158-160.

⁴⁸ Ibid., 171-172.

⁴⁹ Ibid., 151.

⁵⁰ Richard Simpkin, *Mechanized Infantry*, 66.

⁵¹ Lt. General of Tank Troops A. Bondarenko, "On the Utility of BMPs in Battle," *Military Herald*, No. 10, October 1975, quoted in Karber, "The Soviet Antitank Debate," *Armor*. No. 6 Nov-Dec 1976, 14.

⁵² William Lind a military advisor to then senator Gary Hart was a vocal critic of the doctrine in the 1976 FM. His critique and counter is contained in *Maneuver Warfare Handbook* (London: Westview Press, 1985).

⁵³ For the thrust of this paragraph I am reliant on Richard Swain's introduction to *Selected Papers of General William E. DePuy*, (Leavenworth, KS: Combat Studies Institute, United States Army Command and General Staff College, 1994), pp. vii-xiii.

⁵⁴ In this article DePuy points out, using the example of the western allies after Normandy that a competent uncooperative enemy, as well as friendly limitations, can often force even the most renowned of maneuver warfare practitioners into an unavoidable attritional mode. I believe this point is essentially unanswered by DePuy's critics. William E. DePuy, "Infantry Combat," *Infantry*, March-April 1990, 8-9.

⁵⁵ Haworth, 141.

⁵⁶ Chaim Herzog, *The Arab-Israeli Wars*, (New York: Vintage Books, 1984), 251-254.

⁵⁷ While mentioning that tanks cannot survive alone, DePuy clearly places all other arms in subordination to assisting the movement of tanks. This is conceptually no different than obstructionist inter-war notions that everything supports the infantry. For evidence of this see the Draft for a memorandum to the Chief of Staff in, William E. DePuy, *Selected Papers of General William E. DePuy* comp. Richard M. Swain (Leavenworth, KS: Combat Studies Institute, 1994), 143-148.

⁵⁸ John L. Romjue, *From Active Defense to Airland Battle: The Development of Army Doctrine: 1973 to 1982* (United States Army Training and Doctrine Command, Fort Monroe VA: 1984), 51.

⁵⁹ William E. DePuy quoted in, *Ibid.*, 83.

⁶⁰ *Ibid.*

⁶¹ The second TRADOC commander General (Retired) Donn A. Starry counters this view. It is possible that, while correct about the actual low number of ATGM kills he underestimates the combined arms synergistic effects that result when tanks are simultaneously engaged by ATGMs and other systems, see Donn A. Starry, "Reflections", in *Camp Colt to Desert Storm: The History of U.S. Armored Forces* (Lexington, KY: The University Press of Kentucky, 1999), 560.

⁶² Herbert, 41.

⁶³ Haworth, 106.

⁶⁴ William E. DePuy, *Selected Papers of General William E. DePuy*, comp. Richard M. Swain (Leavenworth, KS: Combat Studies Institute, 1994) 166.

⁶⁵ John W. Foss, "Commandant's Notes," *Infantry* July-August, 1985, 2f.

⁶⁶ Donn A. Starry, "Reflections", in *Camp Colt to Desert Storm: The History of U.S. Armored Forces* (Lexington, KY: The University Press of Kentucky, 1999), 538.

⁶⁷ Ibid.

⁶⁸ Richard Simpkin, *Mechanized Infantry*, 36.

⁶⁹ Haworth, 62.

⁷⁰ Department of Analysis, United States Army Training and Doctrine Command, "IFV and CFV Cost and Operational Effectiveness Analysis," (Fort Monroe, VA: 15 October 1978), 172.

⁷¹ Brigadier General (Retired) Philip Bolté, phone interview with the author, December 1999, Fort Leavenworth, KS.

⁷² Major General (Retired) Stan Sheridan telephone interview with the author December 1999, Fort Leavenworth, KS.

⁷³ Virgil Ney, *The Evolution of the Armored Infantry Rifle Squad*, (Fort Belvoir, VA: United States Army Combat Developments Command, 1965).

⁷⁴ Both Bolté Sheridan Program Managers between 1975 and 1980 received this impression, phone interviews with the author December 1999, Fort Leavenworth, KS.

⁷⁵ Haworth, 129.

⁷⁶ Ibid., 217.

⁷⁷ Douglas K. Lehman, "Two Views on the Rifle Squad: Keep it Small," *Infantry*, May–June 1980, 19.

⁷⁸ To my knowledge this is the first time this decision has been identified, Major General (Retired) Stan Sheridan, phone interview with the author, December 1999, Fort Leavenworth, KS.

⁷⁹ General (Ret) Paul F. Gorman, *The Secret of Future Victories* (Fort Leavenworth, KS: Combat Studies Institute, U.S. Army Command and General Staff College, 1992), III-35.

⁸⁰ Brig General (Retired) Bolté phone interview with the author, December 1999, Fort Leavenworth, KS.

⁸¹ Department of the Army, "Bradley Fighting Vehicle," White Paper 1986, 3.

⁸² See the concept of forward defense in, Federal Minister of Defense, “Army Regulation 100/100 Command and Control of Armed Forces,” (The Federal Minister of Defense, Bonn: 1987), 1-3

⁸³ For the benefits of having a combat history based doctrinal antecedent to technological investment see Naveh and Boyd.

⁸⁴ Haworth, 141.

⁸⁵ Carl F. Ernst and David M. White, “Bradley Infantry on the Airland Battlefield,” *Infantry* May – June 1986, 21.

⁸⁶ Richard Simpkin, *Mechanized Infantry*, (Oxford: Brassey’s Publishers Limited, 1980) 29.

⁸⁷ “Commandants Note,” *Infantry* May-June 1980, 3.

⁸⁸ Richard Simpkin, *Mechanized Infantry*, 44 and 48.

⁸⁹ John W. Foss, “Commandant’s Notes,” *Infantry* July-August, 1985, 2f.

⁹⁰ Major Edward G. Gibbons, Jr., “Why Johnny Can’t Dismount: The Decline of America’s Mechanized Infantry Force,” (Fort Leavenworth, KS: School of Advanced Military Studies Monograph, United States Army Command and General Staff College, 1996) 34-35.

⁹¹ John W. Foss, “Commandant’s Notes,” *Infantry* July-August, 1985, 2f.

⁹² Major General Michael F. Spigelmire, “Bradley Platoon Organization,” *Infantry*, January-February, 1980, 1.

⁹³ See Major Frederick S. Rudesheim, SAMS Monograph “The Bradley Infantry Squad Leader: A Breach of Faith,” (Fort Leavenworth, KS: United States Army Command and General Staff College, 1992).

⁹⁴ Ibid., 36-38.

⁹⁵ Headquarters, Department of the Army, “FM 100-5: Operations” (Washington, D.C. GPO, 1982), p.7-4.

CHAPTER 4

CONCLUSIONS

A Specialized Armored Infantry?

Essentially small tanks with compartments for a handful of infantrymen, infantry fighting vehicles are useful for such tasks as providing anti-infantry and anti-antitank protection for main battle tanks, reconnaissance for armored formations and escort services for convoys. Their immediate effect on infantry units equipped with them, however, is to convert them into something other than infantry. This is done by reducing both the size and number of rifle squads and making the remaining infantry teams dependent on their vehicles for everything from transport to covering fire.¹

John English, *On Infantry*

It is clear from the above quote just where, English, a retired Canadian infantry officer and a respected historian of infantry, stands on a discussion of types of infantry. For English, at least in 1994 when he wrote this challenging passage, IFV-equipped infantry has so few men on foot, it has ceased to be infantry. English's view on a specialized armored infantry deserves to be taken seriously. His seminal work *On Infantry* provides one of the most persuasive accounts of the continued relevance of modern infantry as well as an account of how infantry employment and combat power has adapted itself to throughout the last century.

If English can make such a definitive statement about a type of infantry, then the discussion of types of infantry is not mere semantics. Defining concepts for types of infantry has important implications for force structure, doctrine and warfighting. The permanence of this topic as an issue indicates it deserves some review in our discussion.

The key recent development in U.S. Army mechanized infantry structure has been the reduction in the numbers of dismounted infantry. As this paper has pointed out, it

was also one of the most controversial. The Army briefly accepted this reduction with initial fielding of the Bradley in the early 1980s but rapidly learned that the ensuing structure left mechanized divisions with too little dismounted infantry. Unit failure at the Army's Combat Training Centers revealed this deficiency. The solution to this lack of infantry has been a seventeen-year manipulation of tables of organization that has ultimately resulted in a platoon of Bradley-equipped infantry with three nine-man squads. The nine- man squads represent a relatively low number of personnel for the squad. An historical comparison of Tables of Organization reveals wartime increases in squad size to around twelve.²

After 1983 mechanized commanders quickly came to conclude that the low number of dismounts in the original Bradley platoon was inadequate and presented a serious problem. While the practical solution to the problem the Army has employed is to increase the number of dismounts in all mechanized infantry a different type of recommendation was offered in the mid-1980s. This recommendation is Brigadier General (Retired) Huba Wass de Czege's already-mentioned notion that tank-infantry cooperation requires an armored infantry that need not concern itself with the infantry intensive tasks of the defense or attack of prepared positions. Unfortunately the historical record does not support this kind of truncated view of the role of armored as opposed to mechanized infantry. Nor does field experience suggest that a reduced number of dismounts provide adequate foot infantry to perform those tasks for armored infantry on which there is general agreement.

Wass de Czege's recommendation has, in effect, been rejected as the evolution of the Bradley platoon structure attests. The idea itself, however, clearly has continued appeal as Haworth's essential agreement with it ten years later suggests.

Historical precedent exists for the Wass de Czege suggestion that there should be a specialized armored infantry concentrating on tank support rather than infantry-intensive tasks. This historical precedent never surfaced in the 1980s with any scholarly detail or rigor. Save a master's thesis by Robert St. Onge historically-based doctrinal research had no voice, and the discussion was conducted with relative myopia in regard to the existence of historical precedents. Wass de Czege's specialized armored infantry was in effect in existence with the early Bradley battalions. He argued not that the Bradley battalion needed to be changed but that it should not be pressed into a role for which it was ill-suited. Wass de Czege specified this role as the infantry and equipment intensive tasks of the defense and seizure of prepared positions--a set of tasks he believed belonged to mechanized infantry. This 1980s view is nearly identical to the late 1930s view that, because tanks should only be used en masse for exploitation, they only need a relatively small infantry component. In the 1930s and into the early 1940s, the roles envisioned for this small infantry component within these "exploitation-only" tank divisions were centered exclusively on protecting the tank or mopping-up after the tanks had attacked. In this theory, supported in early World War II field manuals, the mission of tanks in an armored division was to avoid any main action and instead to destroy enemy, "command posts, communication centers, supply installations, reserves and artillery."³

Yet this 1930s concept that tank divisions were exploitation specialists only and that this exploitation could be focused exclusively on “soft” targets was invalidated during World War II by the combat experience of all sides. A living, thinking, adaptive enemy simply did not cooperate in allowing armored commanders to conduct tank attacks against only soft targets. Similarly, operational commanders quickly discovered trying to limit tank division employment to only exploitation was a case of limiting options for the sake of a theory.

Placed in its historical context within the legacy of mechanized combat experience, a specialized armored infantry is invalid for the same reason that a specialized exploitation-only tank division is invalid--real world experience defies the neat categories of pet, branch-oriented tactical theory. Another mark against the specialized theories is conceptual. The specialized theories for tanks and armored infantry are allied to a supported-supporting paradigm. This paper has already suggested that such arrangement of efforts erodes an Army’s comprehension of and ability to execute combined arms warfare at the tactical level.

If the U.S. Army infantry were to create a specialized armored infantry it would be creating a type of infantry designed to support a type of tank force that has been invalidated by combat experience. The historical record simply does not indicate that armored formations can be infantry-poor because they need not concern themselves with fighting that is infantry intensive. This does not suggest that the best use of tank elements is to hurl them into positional warfare. Nor does it exclude the idea that mechanized infantry divisions with more infantry and fewer tanks in their structure may serve a purpose, (such as the ROAD mechanized infantry division).

The conclusion that a specialized armored infantry is invalid only suggests that the fact that warfare in and around fortified positions is infantry intensive is not a valid rationale for justifying reducing the numbers of infantry in tank formations. Admittedly throwing tank-heavy elements into positional warfare is not an optimal use of that asset. Neither is limiting field commander's options via overspecialization a wise criterion of force design. Above all criteria for determining the amount of infantry needed in tank formations should be based on the historical record and analysis of capabilities.

The real world of mechanized combat, for which World War II and the Arab-Israeli Wars remain the base experience, does not provide neat, orderly, compartmentalized, history proof texts in which infantry creates a breakthrough that tanks exploit. Rather it preserves a record of the Army learning that tactical effectiveness was almost always best served by close tank-infantry-artillery cooperation at echelons as low as company.

Wass de Czege's suggestion does, however, have some parallels in recommendations by then Major Robert St. Onge that perhaps some M113-equipped infantry should be preserved in the force structure.⁴ This in turn is similar to the Bundeswehr's retention of an APC-equipped battalion in its otherwise Spz-equipped Panzergrenadier Brigade in the late 1950s. This combination within the same brigade, however, would not represent the creation of a separate type of armored infantry. It would instead bear witness to recognition of the requirement for a robust infantry within mechanized formations. It is in this light that the criticism contained in John English's quote on IFV-equipped infantry which appeared at the beginning of this section can be addressed. Only if mechanized infantry specializes in a manner that combat history

indicates is impractical, will it cease to be infantry. Effectively, the seventeen-year struggle to get a sufficient number of right-sized infantry squads back into the Bradley-equipped infantry is the U.S. Army's admission that John English was correct. It is also the antidote to the criticism he leveled.

Overall Conclusions: Past Confusion, Present Strife

Prior to World War II in the United States, mechanized development followed separate infantry and cavalry branch-dominated avenues. The Cavalry branch at first attempted to simply apply mechanization to traditional cavalry security and reconnaissance roles. The infantry it envisioned was one of limited or truncated roles.

The Infantry branch on the other hand sought to create a narrow doctrine in which tanks served only to support infantry attacks. Fortunately for the U.S. Army both practical experience in field exercises and the obvious efficacy of mechanized forces in the early days of World War II liberated both tanks and the mechanized infantry that fought alongside them from an overspecialization of roles. Concepts that would relegate tank divisions to exploitation only did retain some force in field manuals; however, tank-infantry cooperation amidst diverse, shifting, battlefield realities mitigated against rigid applications of theory. By the end of the war doctrine writers reflected this in revised field manuals.

To the extent that World War II veterans systematically reflected on their vehicle's firepower, their focus was on suppressive fire to support infantry maneuver. For the dismounted infantry itself the mix of new and better weapons assigned at squad level was the major infantry firepower trend of the war. Again, firepower of the infantry proved important, but the development of a diversity of weapons was more significant

than any one weapon's kinetic or high-explosive output. Infantry with a diversity of weapons constituted a potent threat to hostile forces because of its capacity to maneuver into places from which the enemy was not prepared to defend against the particular weapon. It is exclusively foot mobility that makes this possible--a capacity unrelated entirely to the capability of the vehicle the mechanized infantry uses.

As has been seen, the views of prewar theorists of mechanized warfare, if not always wrong about the role of foot infantry in the mechanized fight, required modification in light of actual combat experience. Most theorists at least initially surmised infantry would possess highly limited roles in a mechanized fight.

Why this was so hinges on a view of infantry's role in the mechanized fight that remains with us today. This paper terms this view, the "truncated role theory" of mechanized infantry. Different authors produce different laundry lists but the principal idea behind this truncated role theory is that mechanized infantry exists almost exclusively to assist the forward movement of tanks. While there are many problems with this concept, the fundamental one is that it implies that the optimal utilization of tanks is to get them cut loose from their supporting infantry so they can do the real damage for which they were designed. Whatever other critique one can offer for this notion, it runs counter to what soldiers learned in the largest experiential bases for mechanized warfare that exist--World War II and the Arab-Israeli Wars. Those wars drove home in blood and terror at least one lesson of combined arms warfare. That lesson has arguably best been articulated by Lieutenant Colonel Edward G. Gibbons in a monograph written in 1996, in which he suggested that, "the mutual support derived from

simultaneous tank-infantry cooperation remains the core principle of combined arms warfare at the tactical level."⁵

In the SAMS Monograph from which this quote is taken, Gibbons develops the concept that complementary combined arms effects are the most devastating on an enemy and that simultaneity is necessary to achieve these effects. To expand this further it could be argued that warfare against a capable foe since at least 1918 demands not only combined arms but, at least at the tactical level, a simultaneous application of combined arms.

As to the notion that the optimal use of tanks is to cut them loose from their supporting infantry, as in all theoretical misses there is an element of truth to it. Most missions require tanks to be cut loose from employment and tempo that would slow them to a 2 1/2-mile-per-hour foot-infantry pace. The degree to which infantry is perceived to be the deadweight in the fight is the degree to which some infantry officers may have refused to acknowledge the legitimacy of this concern. Cutting loose from the infantry per se, however, is another problem altogether.

That tanks must not become bogged down to the pace of an exclusively foot-infantry fight is a significant element of successful mechanized infantry doctrine. However, tanks separated from their infantry have frequently met with tragedy. The seeds for that tragedy are amply laid by implying that a tank force's association with accompanying infantry is a transitory matter of getting through an odd choke point or two. Armored infantry, of course, seeks to resolve this issue by equipping itself with a combat vehicle that can keep pace with the tank.

The cycle of military writers and practitioners after World War II were in a position to reflect on why prewar theories tended to underestimate the role of infantry. Their own combat experience invalidated the diminished or truncated roles preached by Fuller, only partially avoided by Liddell Hart, and largely but not entirely avoided by the Germans. As to theory, Liddell Hart, in particular, developed comprehensive discourses on the necessity of infantry forces in mechanized warfare as well as their continued relevance in the mechanized era.⁶ Nevertheless it is fair to say the reason prewar theory underestimated the role of mechanized infantry originated in the view that some of the mechanized warfare enthusiasts in the inter-war years exaggerated the capability of tanks operating alone.

Effective mechanized warfare doctrine was in fact a combined arms doctrine in which no one weapon or arm was institutionally exalted as the decisive weapon or arm around which other weapons must be arranged in support. This tendency, the tendency to identify a specific weapon as decisive and develop a doctrine that claims all other weapons support it constitutes a supported-supporting paradigm of combined arms warfare. Ogorkiewicz's understanding of this paradigm's existence and deficiency has already been mentioned. Historically, in regard to World War II, as the panic and shock value of tanks began to diminish, infantry had to become much more an active partner within armored units.

There are of course instances when German theorists in particular would stress that the tank was the centerpiece of offensive warfare. However, such statements took place within a context that strongly emphasized all-arms. Further, German military culture was nonformulaic and nonprescriptive,⁷ and their early experiences in World War

II served to curb any limited tendencies toward a strict supported-supporting paradigm that may have existed. It is important to highlight the Germans in this discussion because of the American tendency to admire their tactical acumen.

Relation to the Operational Level of War

This work has of necessity touches only lightly on the relationship of operational and strategic thinking to armored doctrine. Concepts developed by Soviet military thinkers in the 1920s and 1930s were highly original and suggest a profound understanding of the effects of combined arms. Some of their ideas are of particular relevance in uncovering a supported-supporting paradigm that undermines true integration of the arms.

Soviet military theorist Georgiy S. Isserson's notion of the "disaggregation of forces" resulted from his study of modern war. Isserson's study described both the complexity of modern war and the diversity of its weapons systems as a salient and revolutionary feature. It is hard to object to his claim that a phenomenon of modern war is the multiplication and increasing complexity of weapons and capabilities. Isserson's thought in this area suggests a critique of the notion of a decisive arm, or supported-supporting paradigm. Isserson saw operational art's task as that of reaggregating diverse effects.⁸ Isserson's approach for the operational level suggests a similar dynamic at the tactical level. It suggests the essence of combined arms should be the reaggregation of disparate combat forces.

If it is true that Isserson's aggregation concept is applicable to the tactical level then the scope and scale of the tactical level must be taken into account. Differences in scale will invite differences in the method one needs to employ at each level to achieve

reaggregation of weapon and unit effects. It is possible the operational level of war might permit the latitude to make combined effects either simultaneous or sequential. At the tactical level, however, a sequential application is often disastrous resulting in a fight of strength on strength or like fights like. It is the difference in scale between the operational (Isserson's main concern) and the tactical that suggests simultaneity is more of an issue at the tactical level. That point, if true, provides further theoretical support for Gibbons' earlier cited concept.

The Western tendency to emphasize the primacy of a new weapon--the tank-- constitutes an example of a supported-supporting paradigm. In such a paradigm combat capabilities remain essentially disaggregated. As a result one of the central challenges resulting from the complexity of modern war remains unmet. Historical doctrinal failures to come to terms with the need to reaggregate at the tactical level were colored over by substituting one decisive arm for another. Initially the earliest Western proponents of armored warfare were like their hide-bound opponents in at least one respect--the paradigm they used to advocate the new arm was wholly unoriginal.

They told a story in which there remained a single arm that achieved decisive results on the battlefield. The key difference with the past consisted in which arm now was primary. In their eyes infantry had to step off center stage and make way for the tank. For many, particularly the British theorists, the decisive arm had changed but the basic paradigm through which they viewed tactics remained unchanged. As in the past tactical efforts of secondary arms had been arranged to support the infantry, now they were arranged to support the tank. Though far from liberating, a coup of sorts had taken place by 1940, but for the sake of a truly integrated approach to combined arms a despot

had fallen only for the crowd to witness the coronation of another tyrant. Battlefield realities ultimately brought most armies if not to a balanced force at least to a desire for one. Still, the legacy of a deeper problem, that of the supported-supporting paradigm is with us still.

United States Army Mechanized Infantry

Regrettably the combat-validated approach which overcame this paradigm, even though contained in late World War II manuals, was lost to the U.S. Army's collective memory. That portion of the Army's institutional memory which contained mechanized infantry suffered a bout of amnesia. The reasons were primarily twofold. Armored divisions did not fight in the Korean War; therefore the memory of tank-infantry cooperation in which tanks played a large role faded from practical experience. This fact and the domination of nuclear and airpower concepts created a crisis of purpose for Army doctrine in general. This environment was so hostile that Maxwell Taylor described it in biblical terms as the Army's "Babylonian Captivity." The obsession with technology and the marginalization of land power seriously undermined anyone's ability to articulate the value of dismounted maneuver. Defense concepts of massive retaliation that diminished the role of ground forces in general served to diminish the role of infantry fighting on foot doubly so. In light of this a tendency to focus on the vehicle and vehicle firepower gained strength.

Coming out of World War II all armies were faced with the inadequacies of their current vehicles for mechanized infantry. The Germans in particular were haunted by the need to keep up with tanks and rapidly transition between mounted and dismounted combat. This capacity to transition rapidly, which exploited mechanization and ensured

close tank-infantry coordination, was for the Germans the key characteristic of mechanized infantry. It included the ability to shoot on the move. However, the primary means of effecting the shoot-on-the-move capacity was the cannon on the vehicle. The Bundeswehr-era Germans acknowledged the utility of the squad employing its weapons from the vehicle but also noted a laundry list of situations in which such employment would be impractical.

These German concepts were to have a decisive impact on American IFV development. The literature of the era indicates the U.S. Army imported these ideas only after subjecting them to considerable distortion. Specifically the ability of the squad to fight while inside the vehicle became an American combat development obsession. The proof of this obsession is the energy and commitment exerted on requiring firing ports and firing port weapons during the development of the MICV. Combat Developers at Benning wrote whole articles whose main theme was the significance of the squad's ability to employ its small arms under cover through firing ports. Typically, however, the firing ports did not even match the limited extent to which the Germans emphasized the squad firing from the vehicle. The German usage allowed over the top firing of all types of weapons not just small arms. As happened with the reduced number of dismounts this requirement was rather quickly invalidated by field experience. The Russian emphasis on fighting in a radiologically contaminated environment had also provided fuel for the design requirement of shooting under cover on the move.

The overall impact of the mania to have the squad shoot on the move, however, was unintended and far more profound. The second order effect of demanding the squad fight from within the vehicle was to push doctrinal considerations away from the value of

dismounted maneuver. The squad after all was meant to have a preference for shooting on the move from within the vehicle. These trends were impacting U.S. Army mechanized infantry doctrine in a significant way in the mid to late 1960s and into the early 1970s. This distortion might have been avoided had a broad study of the history of mechanized infantry doctrine been part of the development process. Such study should have included the World War II record as well as an examination of the experiences of the Soviet, German and British armies up to the present.

The historical myopia evident in the development of Bradley-equipped mechanized infantry remains a flaw in U.S. Army force development to this day. Until historically based doctrinal research receives its own respected place within the force development panoply this flaw will remain.

The shock of the lethality of the Arab-Israeli War, the loss of a generation of mechanized vehicle modernization during the Vietnam War, the political desire to match German strategic concerns, and the emotional escape from Vietnam afforded by immersion in the German or NATO central front, were all influences that tended to marginalize the value of dismounted maneuver even further than the shoot on the move requirement. When these trends were coupled to William DePuy's focus on weapon capabilities, considerable intellectual ammunition was available to negate everything that had been learned since World War II on both optimal mechanized structure and infantry squad organization. DePuy's suggestion that the Army was approaching, if not already in, an era where the human element must now be arranged to fit the weapon rather than vice versa simply put the nail in the coffin of any appreciation for what infantrymen on foot could provide a combined arms team.

The weapon-centered approach permeated TRADOC for several years. It made it possible for a Chief of Armor to recite a list of combined arms assets without mentioning infantry.⁹ It also made it possible for a Chief of Infantry to challenge junior officers on their combined arms skills by querying, "do you understand how to fight with weapon systems?"¹⁰

As a result the Army received a unit design that proved inadequate and problematic and for which Infantry branch in particular had not planned and was ill-prepared. Infantry branch had not planned for a new type of squad in which one of the fire teams was a vehicle with a cannon and turret. The final effect of all the converging trends and influences mentioned above was a doctrinal concept that in the mechanized fight firepower can make up for the small squad. To the extent that nonmilitary academics have approached this issue (Haworth), it is apparent that the profirepower argument is persuasive to the outsider. DePuy used it on Rogers, and the second Bradley program manager offered it as excuse for the smaller sized squad.¹¹

Again it must be stressed that the problems in mechanized infantry development come down at their most basic level to an obsession with current technological innovation and therefore measureable weapons performance data over and against a combined arms approach that focuses on effects on the enemy. The retrieval of a combined arms approach is not possible without broad based historical research--a research which, in the case of mechanized infantry needs to include a type of history of tactical combat practice that is rare.

Surveys of doctrinal and structural trends are also important. The story of U.S. Army mechanized infantry doctrine is a saga that brings to light larger issues on the need

to institutionalize historical research into the force development process. The pre-TRADOC Combat Development Center historical studies used to have a "Contributes to:" column in their bibliographic data section. In Virgil Ney's *Evolution of the Armored Infantry Rifle Squad*, for instance, this column refers the study to "weapons system development . . . MICV 70."¹² Had studies such as Ney's been influential in mechanized infantry combat developments the Army might have been spared considerable confusion in mechanized infantry doctrine and fielding.

The Army reaped obvious benefits from the creation of TRADOC. It lost, however, even the barest outlines of an institutionalized framework for integrating historical research into combat and force development. The difficulties encountered in mechanized infantry doctrine and Bradley vehicle development cited above could have been considerably alleviated had a broader historical perspective than, for example, imitating contemporary German and Israeli strengths been available. Unfortunately the misuse or lack of use of history is nothing new. As one veteran British historian has put it,

the lessons of history are so seldom learned or heeded. The world is up against two forces which obscure vision. One. . . . is the a-historical, engineering, problem-solving approach by means of mechanical models and devices. This. . . . has no perspective, and it cannot take account of anything not fed into the model or the device from the start.¹³

In the case of U.S. Army mechanized infantry doctrine the price for neglect of historical research and perspective in force development was the arrival in 1982 of a Bradley platoon structure which was in fact a regression from previous concepts. This structure maintained a fiction of retaining the modern two-team articulated infantry squad. The structure, however, was a pretense. The concept was born to consider the

Bradley vehicle itself as one of the teams within the squad. The other team in the squad consisted of the remaining infantry when dismounted. This study has discussed how, over the lifetime of the Bradley's development, the number of these dismounts went from seven, to six and finally to a de facto five. At each dribbling away of the squad's strength increased firepower was the culprit. Apparently no one, aside from a few proponents of a smaller squad, had either proposed or envisioned a structure of this type. The Bradley's role as a weapons platform became the primary focus. A turret-mounted, stabilized cannon required a turret crew of two rather than the originally envisioned one. The inclusion of a TOW missile launcher at the behest of the Department of Defense¹⁴ reduced space within the vehicle and drove dismount strength down by another one. The need to leave a soldier in the vehicle to reload the TOW launcher drove it down yet again.

Infantry simply did not have the clout or possibly even the desire to resist this developmental direction and preserve the significance of dismounted action. Yet the preservation of dismounted capability would not have served parochial interests but the best interests of the army in its struggle to maintain a combined arms focus. Nevertheless the absence of a robust dismounted element would be painfully evident as the Army fielded the first Bradley equipped battalions. The doctrinal rationale to justify this one vehicle plus one five man team equals one mechanized infantry squad, had their origins in tendentious interpretations of the lessons of the Arab-Israeli Wars. The need to serve as an armored vehicle and antitank killing weapons platform directly drove down the significance of the carried infantry.

The story of mechanized infantry doctrinal development lays bare a systemic problem in force development. Thinking in a supported-supporting paradigm serves to

accentuate the decisiveness of a particular weapon system, but in so doing undermines combined arms. Ultimately this may be a pedagogical problem. How do we articulate combined arms doctrine? How do we teach ourselves and others? This study suggests that the habit of speaking in a supported-supporting paradigm needs to be excised from our manuals and common descriptive phrases. Failure to do so will leave too much of our discussion of tactics and weapons capability coming off as thinly disguised branch promotion.

In light of the potential for branch-blinders it is understandable that force developers would seek to place their efforts on an almost exclusively quantifiable basis. They need to find objective criteria. In doing so rigorous thinking about actual combat experience and the employment of units, which is to say, history of a very unique kind falls by the wayside.

It is of course far too easy in hindsight to review the factors that resulted in a less than optimal debut for the Bradley. If formalized integration of historical research into force developments is virtually nonexistent, doctrinal development is not much less so. The place of doctrinal development within the Army's force development process is revealing. It is positioned as a first step.¹⁵ Given the apparent lack of resources dedicated to doctrinal development it appears as an initial, but not well respected, check. Doctrinal development seems positioned as a first step in meeting a requirement mostly as a possible cost saving measure. A doctrinal change after all may well prevent recourse to a new procurement program. This positioning of doctrine makes some sense but also seems to be, for want of a better term--disingenuous. It fits with a system that

marginalizes reflection on combat experience and the analysis of historical doctrinal precedents in favor of measurable technological performance.

For those who argue technology should lead doctrine the saga of the Bradley and mechanized infantry doctrine should serve as a counter. To paraphrase a line from a recent popular movie, while it is true that, "if you build it they will come," it is not necessarily true that just because you have built it, what you have built serves the occupant's needs. In 1982 the Army seriously imbalanced its mechanized force structure and overall composition. As a result U.S. Army forces that possessed the most firepower--mechanized forces--lost considerable flexibility via a degradation of the ability to conduct dismounted maneuver. This made them less of a combined arms team and more of a mere firepower generator. This lack of capability made itself felt almost immediately at the Combat Training Centers.

Doctrine of course is subject to easy manipulation. It is doctrinal research based on a broad historical study that was most lacking in the story of American mechanized infantry over the last twenty-plus years. It is probable that if something like the Research Group of the Combat Developments Command been allowed clout and input into the development of the American IFV the American mechanized infantry would have had a three by nine squad platoon structure as early as 1982 rather than belatedly arriving at it in 1999. Of course the effect on the infantry itself is only a means to an end. The goal or end is effective combat power. Closely integrated combined arms resulting in a more effective Army is the goal--not preserving any unique or central role for infantry. Above all this study suggests that claims about an arm being primary, key, or decisive undermines combined arms and is, as a result, ultimately amateurish and ahistorical.

As to the current state of combined arms in the U.S. Army, arguably, the Army continues to labor under the shadow of the imbalance created by the introduction of the IFV. As of this writing the Army is engaged in a serious examination of design development on a “medium” weight brigade. This organization is designed, in part, to address the problem that the “light forces are too light and the heavy forces are too heavy.”¹⁶ One might also ask that once this deployability issue is resolved is not the real question whether or not the Army’s main combat force is an effective combined arms team? A team in which more often than not, and terrain where it at first appears impossible, tank-infantry cooperation remains the core of combined arms warfare at the tactical level?

Recommendations

Institutional constructs and modes of expression that treat mechanized infantry as something less than “real” infantry must be replaced by better ways of articulating its role. Infantry branch’s inability or unwillingness to articulate the unique contribution of infantry within the mechanized fight also contributed to the problematic nature of Bradley-equipped mechanized infantry development. This study recommends borrowing the German notion that the primary characteristic of mechanized infantry is its capability to rapidly transition between mounted and dismounted combat.

Giving due recognition to this primary characteristic of mechanized infantry reminds us that what is unique to mechanized infantry qua mechanization is the agility with which it transitions between mounted and dismounted action. This agility concept is a superior means of articulating the role of mechanized infantry. It stands in stark contrast to the habit of attempting to simply define roles and tasks. While the laundry

listing of tasks one sees in U.S. Army field manuals serves a purpose they are somewhat limited as concepts as they are inevitably conditioned by transitory threats. For example the U.S. Army no longer faces as its central threat focus a massed armor Soviet invasion of Western Europe. As a result, if the Army designed a post-M113 MICV today it is hard to imagine defense analysts would insist, at least with the same vehemence, on including a TOW missile launcher into the design.

What men on foot contribute to the mechanized fight should be the focus of description within field manuals, not the additional firepower of the IFV. If the reverse were true, then armies should ask whether or not they need infantry at all within their mechanized formations. Infantry on foot should also be described as an arm that is unique in its ability to employ a diverse set of weapons from an unexpected vantage point by means of stealthily permeating and penetrating the ground. This phrase might serve as a useful first attempt at defining the concept of dismounted maneuver and what it brings to the battlefield. The notions of mechanized infantry as a fixing force or a force that provides a pivot around which tank-heavy forces can maneuver is a regression to overspecialized roles reminiscent of the pre-World War II era. Regrettably these very notions are contained in the current (June 1993) version of the Army's capstone doctrinal manual, FM 100-5, *Operations*.¹⁷

It is important to point out that in stressing dismounted maneuver, firepower remains important, but diversity of weapons more important still. Infantry's unique utility comes from its ability to conduct dismounted maneuver. This ability allows it to employ highly lethal missiles, rockets, demolitions, machine guns, and an assortment of weapons, as well as calling for fire, from positions on the battlefield that surprise the

enemy and in conjunction with other assets of the combined arms team place an enemy in a dilemma. Close assault with rifle, grenade and bayonet remains an important potential function of infantry but to reduce infantry to only, or even primarily, the close assault function is to miss much of its value on the modern battlefield.

Many of the individuals working on the aforementioned medium or interim brigade project will doubtless make reference to historical examples and case studies. Their efforts at historically based doctrinal research will of necessity be somewhat haphazard and diffuse. It is not reasonable to expect them to invent an ad hoc historical research group to provide depth and context to their ideas. Again, the Army force development process needs the support of a systematic approach to development with a broad historical perspective.

It has taken seventeen years for mechanized infantry to make a tortured migration from a doctrinal orphan to an active partner in the combined arms team. Its journey is not over yet. It would do the Army and the nation it serves well if the interim brigade were spared the same type of avoidable, torturous, postfielding migration. Whether or not historically based doctrinal research is the tool to answer issues facing medium brigade force development it is impossible to say. One is on more certain ground, however, by suggesting that it is essential in order to know how to ask the right questions.

¹ English and Gudmundsson, 173.

² Virgil Ney, *The Evolution of the Armored Infantry Rifle Squad*, 79-86.

³ "Armored Force Field Manual, Tank Platoon", FM 17-30, 4.

⁴ Robert St. Onge, 14.

⁵ Gibbons, 15.

⁶ For an account of the importance and originality of Liddell Hart's work on infantry see, English and Gudmundson, 46-53.

⁷ For an example see., *Ibid.*, 51.

⁸ Bruce W. Menning, "Operational Art's Origins," *Military Review*, September – October 1997, 38.

⁹ Major General Frederic J. Brown, "Commander's Hatch", *Armor*, January-February, 1983, 5.

¹⁰ Major General Willard Latham, "Commandant's Notes," *Infantry*, March-April 1977, 2.

¹¹ Brig. Gen. (Ret) Philip L. Bolté, "Where Were They When the Paper Was Blank: A Response to the Critics of the Bradley Fighting Vehicles", *National Defense*, April 1982, 12.

¹² Ney, *The Evolution of the Armored Infantry Rifle Squad*, unpaginated pages at the end of the book. The Combat Operations Research Group was the actual agency within the Combat Developments Command responsible for these studies.

¹³ Eric Hobsbawm, "What Can History Tell Us About Contemporary Society?" in *On History* (NewYork: The New Press, 1997), 35.

¹⁴ Major General (Retired) Stan Sheridan telephone interview with the author, December 1999, Fort Leavenworth, KS.

¹⁵ United States Army Command and General Staff College, "Resource Planning and Force Management," (Leavenworth, Kansas: United States Army Command and General Staff College, August 1999, 4-2 and 4-4.

¹⁶ William L. Stearman, "Medium-Weight Brigade: Army's Part of Joint Force," *Army Times* 60 no., 19 (6 December 1999): 24.

¹⁷ Headquarters, Department of the Army, "FM 100-5: Operations," (Washington, D.C.: Department of the Army, 1996), 2-22.

BIBLIOGRAPHY

Books

Addington, Larry H. *The Blitzkrieg Era and the German Staff, 1865-1941*. New Brunswick, NJ: Rutgers University Press, 1971.

Bernardhi, Friedrich von. *The War of the Future in the Light of the Lessons of the World War*. Translated by F. A. Holt. New York: D. Appleton and Co., 1921.

Bond, Brian. *British Military Policy Between the Two World Wars*. Oxford, UK: Clarendon Press, 1980.

Bracken, Jerome, Moshe Kress, and Richard E. Rosenthal, eds., *Warfare Modeling*. Danvers, MA: John Wiley & Sons, 1995.

Burton, James G., *The Pentagon Wars: Reformers Challenge the Old Guard*. Annapolis: Naval Institute Press, 1993.

Cook, Robert G., and Robert A. Baker. *The Tank Commander's Guide*. Harrisburg: The Stackpole Company, 1960.

Corum, James S., *The Roots of Blitzkrieg: Hans von Seeckt and German Military Reform*. Lawrence: University of Kansas Press, 1992.

D'Este, Carlo. *Patton: A Genius for War*. New York: HarperCollins, 1995.

Doubler, Michael D. *Closing with the Enemy*. Lawrence, KS: University of Kansas Press, 1994.

Doughty, Robert A. *The Evolution of U. S. Army Tactical Doctrine, 1946-1979*. Leavenworth Papers No. 1. Fort Leavenworth KS: Combat Studies Institute, U. S. Army Command and General Staff College, 1979.

_____. *The Seeds of Disaster: The Development of French Army Doctrine 1919-1939*. Hamden, CN: Archon Books, 1985.

Douhet, Giulio. *The Command of the Air*. Translated by Dino Ferrari, Washington, D.C.: Office of Air Force History, 1983.

Dyster, Paul A. *In the Wake of the Tank: The 20th Century Evolution of the Theory of Armored Warfare*. Dissertation, Baltimore: The Johns Hopkins University Press, 1984.

English, John A. and Bruce I. Gudmundsson. *On Infantry: Revised Edition*. Westport, CN: 1994.

_____. *The Mechanized Battlefield*. edited with J. Addicott and P.J. Kramers. Oxford: Pergamon-Brassey's, 1985.

Fuller, John F. C. *On Future Warfare*. London: Sifton Praed & Co., Ltd., 1928.

_____. *Armored Warfare: An Annotated Edition of Lectures on F. S. R. III (Operations Between Mechanized Forces)*. Harrisburg, PA: Military Service Publishing Co., 1943.

_____. *The Second World War, 1939-45*. New York: Duell, Sloane and Pearce, 1949.

Gabel, Christopher R. Leavenworth Papers No. 12 *Seek, Strike, and Destroy: U.S. Army Tank Destroyer Doctrine in World War II*. Fort Leavenworth, KS: Combat Studies Institute, U.S. Army Command and General Staff College, 1985.

Gillie, Mildred H. *Forging the Thunderbolt*. Harrisburg: The Military Service Publishing Company, 1947.

Gorman, Paul F. *The Secret of Future Victories*. Fort Leavenworth, KS: Combat Studies Institute, U.S. Army Command and General Staff College, 1992.

Guderian, Heinz. *Achtung-Panzer*. Translated by Christopher Duffy. London: Arms and Armour, 1995.

_____. *Panzer Leader*. Translated by Constantine Fitzgibbon. New York: E. P. Dutton and Co., Inc., 1952.

Haworth, William Blair. *The Bradley and How It Got That Way: Mechanized Infantry Organization and Equipment in the United States Army*. Dissertation, Ann Arbor: UMI Dissertation Services, 1995.

Herbert, Paul H. *Deciding What Has to be Done: General William DuPuy and the 1976 Edition of FM 100-5*. Fort Leavenworth, Kansas: Combat Studies Institute, 1988.

Herzog, Chaim. *The Arab-Israeli Wars*. New York: Vintage, 1984.

Hoffman, George F. and Donn A. Starry. Eds. *Camp Colt to Desert Storm: The History of U.S. Armored Forces*. Lexington KY: University of Kentucky Press, 1999.

House, Jonathan M., Research Survey No. 2: *Toward Combined Arms Warfare: A Survey of 20th Century Tactics, Doctrine and Organization*. Fort Leavenworth, KS: Combat Studies Institute, U.S. Army Command and General Staff College, 1984.

Lewis, S. J. *Forgotten Legions: German Army Infantry Policy 1918-1941*. New York: Praeger, 1985.

Liddell Hart, Basil H. *The Future of Infantry*. Harrisburg, PA: Military Service Publishing Co., 1936.

_____. *The Other Side of the Hill*. London: Cassel, 1951.

_____. *History of the Second World War*. New York: Putnam's 1971.

_____. *The Remaking of Modern Armies*. reprint, Westport, CT: Greenwood Press, 1980.

Lind, William S. *Maneuver Warfare*. Boulder and London: Westview Press, 1985.

Lucas, James, and Mathew Cooper. *Panzergrenadiers*. London: MacDonald and Jane's Publisher's, 1977.

Lupfer, Timothy T. Leavenworth Papers No. 4, *The Dynamics of Doctrine: The Changes in German Tactical Doctrine During the First World War*. Fort Leavenworth, KS: Combat Studies Institute, U.S. Army Command and General Staff College, 1981.

MacGregor, Douglas A., *Breaking the Phalanx*, London and Westport, CT: Praeger Press, 1997.

Macksey, Kenneth. *Tank Warfare: A History of Tanks in Battle*. New York: Stein and Day, 1971.

Mellenthin, F. W. von. *Panzer Battles, 1939-1945*. London: Cassel, 1955.

Messenger, Charles. *The Art of Blitzkrieg*. London: Ian Allen, 1976.

Naveh, Shimon. *In Pursuit of Military Excellence: The Evolution of Operational Theory*. London: Frank Cass, 1997.

Ney, Virgil. *The Evolution of the Armored Infantry Rifle Squad*. Fort Belvoir, VA: U. S. Army Combat Operations Research Group, 1965.

_____. *Evolution of the U. S. Army Division, 1939-1968*. Fort Belvoir, VA: U. S. Army Combat Developments Command, 1969.

Nye, Roger H., *The Patton Mind*. Garden City, NY: Avery, 1993.

Ogorkiewicz, Richard M. *Armoured Forces: A History of Armoured Forces and Their Vehicles*. New York: Arco, 2d ed., 1970.

O'Shea, Stephen. *Back to the Front: An Accidental Historian Walks the Trenches of World War I*. New York: Avon Books Inc., 1996.

Perret, Geoffrey. *A Country Made By War*. New York: Vintage Books, 1989.

Romjue, John L., *From Active Defense to AirLand Battle: The Development of Doctrine 1973-1982*. Fort Monroe: Virginia, TRADOC Historical Monograph Series, United States Army Training and Doctrine Command, 1984.

_____. *Prepare the Army for War: A Historical Overview of the Army Training and Doctrine Command*. Fort Monroe: Virginia, TRADOC Historical Studies Series, United States Army Training and Doctrine Command, 1984.

_____. *The Army of Excellence: The Development of the 1980s Army*. Fort Monroe: Virginia, TRADOC Historical Monograph Series, United States Army Training and Doctrine Command, 1993.

_____. *American Army Doctrine for the Post-Cold War*. Fort Monroe: Virginia, TRADOC Historical Monograph Series, United States Army Training and Doctrine Command, 1996.

Rothbrust, Florian K. *Guderian's XIXth Panzer Corps and the Battle of France: Breakthrough in the Ardennes, May 1940*. New York: Praeger, 1990.

Schilling, Warner R., Paul Y. Schilling and Glenn H. Snyder. *Strategy, Politics and Defense Budgets*. New York: Columbia University Press, 1962.

Scott, Harriet Fast, and William F. *The Soviet Art of War: Doctrine Strategy and Tactics*. Boulder, CO: Westview Press, 1982.

_____. *The Armed Forces of the U.S.S.R.* 3rd ed., Boulder, CO: Westview Press, 1984.

Simpkin, Richard E. *Mechanized Infantry*. Oxford: Brassey's Publishers Ltd., 1980.

_____. *Antitank*. Oxford: Brassey's Publishers, Ltd., 1982.

_____. *Red Armour*. Oxford: Brassey's Publishers Ltd., 1984.

_____. *Race to the Swift*. Oxford: Brassey's Publishers Ltd., 1985.

_____. *Deep Battle: The Brainchild of Marshal Tukhachevsky*. Oxford: Brassey's Publishers Ltd., 1987.

Spiller, Roger J. ed. *Combined Arms in Battle Since 1939*. Fort Leavenworth: United States Army Command and General Staff College Press, 1992.

Taylor, Maxwell D. *The Uncertain Trumpet*. New York: Harper & Brothers, 1960.

Weigley, Russell F. *The American Way of War: A History of United States Military Strategy and Policy*. Bloomington: Indiana University Press, 1973.

Zaloga, Steven J. *The M2 Bradley Infantry Fighting Vehicle*. London: Osprey, 1986.

_____. *BMP: Infantry Combat Vehicle*. Hong Kong: Concord Publications, 1990.

Government Documents and Unpublished Monographs and Thesis

Abt, Frederic E. "Tactical Implications of the M2 Equipped, J-Series Mechanized Infantry Battalion Dismount Strength." School of Advanced Military Studies, United States Army Command and General Staff College, 1988.

Burba, Edwin Jr., "M2 Doctrinal Concepts," Unpublished concept paper, Fort Benning GA: The U.S. Army Infantry School, 1984.

Carmichael, John M. "Devising Doctrine for the Bradley Fighting Vehicle Platoon Dismount Element – Finding the Right Start Point." School of Advanced Military Studies, United States Army Command and General Staff College, 1989. (ADA 211 467-2).

Esper, Michael H. "Dismounted Mechanized Infantry on the Future Airland Battlefield Is the Squad Big Enough?" School of Advanced Military Studies, United States Army Command and General Staff College, 1991. (ADA 236 008-5).

Federal Minister of Defense. "Command and Control of Armed Forces, HDv 100/100 VS-NfD, Truppenführung." Translated by Bundesprachenamt, Hürth. Bonn: 7 September 1987.

Gessner, William G, Jr. "The Role of the Fighting Vehicle on the Airland Battlefield." Thesis, Fort Leavenworth, KS: United States Army Command and General Staff College, 1993. (ADA 227 430-5).

Gibbons, Edward G. "Why Johnny Can't Dismount: The Decline of America's Mechanized Infantry Force." School of Advanced Military Studies, United States Army Command and General Staff College, 1995. (ADA 309 833-6).

Glantz, David M. "The Motor-Mechanization Program of the Red Army During the Interwar Years." Fort Leavenworth, KS: Soviet Army Studies Office, 1990, available in the Combined Arms Research Library, call no. 358.180947 G545m.

Hobsbawm, Eric. *On History*. New York: The New Press, 1997.

Hughes, Stephen E., "The Evolution of the U.S. Army Infantry Squad: Where Do We Go Here? Determining the Optimum Infantry Squad Organization for the Future," School of Advanced Military Studies, United States Army Command and General Staff College, 1994. (ADA 293 440-5).

Kipp, Jacob W. "Mass, Mobility and the Red Army's Road to Operational Art." Fort Leavenworth, KS: Soviet Army Studies Office, undated. Available in the Combined Arms Research Library, call no. 355.00947 K57m.

Ling, David H. "Combined Arms in the Bradley Infantry Platoon." master's thesis, Fort Leavenworth, KS: United States Army Command and General Staff College, 1993. (ADA 274 095-5).

Melody, Paul E. "The Infantry Rifle Squad: Size is Not the Only Problem," School of Advanced Military Studies, United States Army Command and General Staff College, 1990. (ADA 225 438-3).

Menning, Bruce W. "Soviet Military Doctrine: Change and Challenge." Fort Leavenworth, KS: Soviet Army Studies Office, 1988, available in the Combined Arms Research Library, call no. 355.00947 M547s.

_____. "The Deep Strike in Russian and Soviet Military History." Fort Leavenworth, KS: Soviet Army Studies Office, 1989, available in the Combined Arms Research Library, call no. 355.00947 M547d.

Metzdorf, Jack R., "Can the Armored Personnel Carrier Be Justified?" Fort Knox, KY: The United States Government Printing Office, 1952.

Nenninger, Timothy K. "The Development of American Armor 1917-1940." Thesis, Madison: University of Wisconsin, 1968.

Ney, Virgil. "The Evolution of the Armored Infantry Rifle Squad." CORG Memorandum, Fort Belvoir, VA: The United Sates Army Combat Developments Command, 1965.

Norris, John G. "The Force XXI Mechanized Infantry Platoon: Will it be an Effective Organization?" Thesis, Fort Leavenworth, KS: United States Army Command and General Staff College, 1993. (ADA 367 664-4).

Office of the Army Field Forces, "Training Text 17-20-1: Armored Infantry Battalion." Fort Monroe, VA: Office Chief of Army Field Forces, September 1954.

Pirnie, Bruce R. "From Half-Track to Bradley: Evolution of the Infantry Fighting Vehicle." Washington, D.C.: Analysis Branch, U.S. Army Center of Military History, undated. Copy from Dr. Pirnie in possession of the author.

Rudesheim, Frederick S. "The Bradley Infantry Squad Leader: A Breach of Faith?" School of Advanced Military Studies, United States Army Command and General Staff College, 1992. (ADA 262 839-2).

St. Onge, Robert J. "The Combined Arms Role of Armored Infantry." Thesis, Fort Leavenworth, KS: School of Advanced Military Studies, United States Army Command and General Staff College, 1985. (ADA 161 788-2).

Steadman, Kenneth A. "The Evolution of the Tank in the U.S. Army." Combat Studies Institute, U.S. Army Command and General Staff College, 1982. Available in the Combined Arms Research Library, call no. 358.18 S799e.

United States Department of the Army. "The Mechanized Infantry Platoon and Squad (APC) FM 7-7." Washington, D.C.: U.S. Government Printing Office, 1985.

_____. "FM 7-7J: The Mechanized Infantry Platoon and Squad (Bradley)." Washington, D.C.: U.S. Government Printing Office, 1993.

_____. "The Tank and Mechanized Infantry Task Force FM 71-2." 1988.

_____. "Tank and Mechanized Infantry Company Team FM 71-1." 1998.

United States War Department. "Armored Command Field Manual: The Armored Division FM 17-100." U.S. Government Printing Office, 1944.

_____. "Tank Battalion FM 17-33." U.S. Government Printing Office, 1944.

Articles and Periodicals

Aiken, Lowell A., "The Panzer Grenadiers Roll Again." 14, no. 7 *Army*, (February 1964): 37.

Birnstiel, Fritz. "German Combat Troops in Action." *Infantry*, November-December 1971, 26-28.

Black, Charles. "Observations on Mid-East War." *Infantry*, March-April 1974, 21-25.

Bolté, Philip L. "Where Were They When the Paper was Blank? A Response to the Critics of the Bradley Fighting Vehicles." *Tank Automotive News* April 1982, 11.

_____. "Abrams and Bradley: How Vital Are They?." *Jane's Defence Weekly* 8, no. 20 (5 December 1987): 1317-1322.

_____. "The AIFV: Modern Mechanized Infantry." *Asia Pacific Defence Review* (October 1994): 12-17.

Bradford, Zeb B., "Mechanized Infantry on the Modern Battlefield." *Infantry*, November-December 1975, 21-24.

Bradley, Clifford D., "The Future IFV." *Infantry*, July-August 1981, 22-27.

Brown, Frederic J. "Commander's Hatch." *Armor*, January-February 1983, 4-5.

Chaudrue, Robert G., "Requiem for the Infantry." *Infantry*, May-June 1978, 28-31.

Cherry, Jeff F. "Mounted Combat." *Infantry*, September-October 1975, 12-15.

Clarke, Bruce C., "When the Armored Personnel Carrier Was Saved for the Army." *Armor*, September-October 1971, 26.

Cucolo, Anthony A., and Dale S. Ringler. "Heavy Infantry: Let's Revive Its Lethality." *Infantry*, September-December 1998, 7-10.

DePuy, William E. "Infantry Combat." *Infantry*, March-April 1990, 8-13.

Dunaway, Roy S. "The Infantry Fighting Vehicle." *Infantry*, July-August 1977, 47-50.

Ernst, Carl F. "Commandant's Note: Mechanized Infantry—Close Combat Fighters of the Heavy Force." *Infantry*, March-June 1997, 1-2.

Ernst, Carl F. and David M. White "Bradley Infantry on the Airland Battlefield" *Infantry*, May-June 1986, 20-24.

Foss, John W. "Commandant's Notes." *Infantry*, July-August 1985, 2-3.

Grange, David E. "Commandant's Notes." *Infantry*, March-April 1981, 2-3.

Infantry Magazine. "Infantry Interview with General Donn A. Starry." *Infantry*, July-August 1978, 16-17.

Infantry School. "Infantry-Artillery-Tank Team in the Attack." *The Infantry School Mailing List*, 28 (July 1944): 23-47.

Infantry School Quarterly, William A. McDowell and Robert A. Scruton eds. "The Infantry-Tank Team in the Attack." 35, no.1 (July 1949): 29-50.

Karbeling, Emanuel. "MIC-V Update." *Infantry*, March-April 1974, 7-9.

Kuykendall, Ronald D. "Why T-P-U? Bradley Crew Evaluation." *Infantry*, January-February 1996, 35-39.

Landis, Steve E. "Let's Reorganize Our BFV Companies." *Infantry*, July-December 1997, 19-22.

Latham, Willard. "On the Point." regular column in *Infantry*, September-October 1975 and March-April 1977, 2-3.

Lehman, Douglas K., "Two Views on the Rifle Squad: Keep It Small." *Infantry*, May-June 1980, 19.

Menning, Bruce W. "Operational Art's Origins." *Military Review*, 77, no. 5 (September-October 1997): 32-47.

Ogorkiewicz, Richard M. "Mechanized Infantry." *Military Review*, 54, no. 8 (August 1974): 67-73.

Pickell, Gregory A. "Designing the Next Infantry Fighting Vehicle." *Infantry*, July-August 1996, 22-32.

Richardson, William R. and Charles R. Steiner. "Training for Maneuver Warfare." *Armor*, July-August 1981, 31-33.

Spigelmire, Michael F. "Commandant's Note: Bradley Platoon Organization." *Infantry*, January-February 1990, 1-2.

Tarpley, Thomas M. "Dear Fellow Infantrymen." *Infantry*, May-June 1974, 3. November-December 1974, 4. January-February 1975, 5.

Wass de Czege, Huba. "Three Kinds of Infantry." *Infantry*, July-August 1985, 11-13.

_____. "More on Infantry." *Infantry*, September-October 1986, 13-15.

Wendt, Todd R. "Bradley M2/M3: The Fighting Vehicle for the 21st Century." *Infantry*, January-February 1997, 23-27.

Primary Sources

Any past article or thesis, to the extent that it reflects historical professional opinion on the issues in this study, could be considered a primary source. However only those items that are unarguably primary sources are listed here.

Bolté, Philip L. Telephone interview with the author, November 1999, Fort Leavenworth, KS.

DePuy, William E., *Selected Papers of General William E. Depuy*, compiled by Richard M. Swain, Leavenworth, KS: Combat Studies Institute, 1994.

Haworth, William Blair J. Telephone interview with the author, December 1999, Falls Church, VA.

Headquarters, European Theater of Operations, U.S. Army. "Report of the General Board, United States Forces, European Theater. General Board Study No. 48: Organization, Equipment, and Tactical Employment of the Armored Division." 1945.

_____. "Report of the General Board, United States Forces, European Theater. General Board Study No. 17: Types of Divisions-Post-War Army" 1945.

_____. "Report of the General Board, United States Forces, European Theater. General Board Study Organization, Equipment and Tactical Employment of the Infantry Division," 1945.

Pirnie, Bruce R. Telephone interview with the author, January 2000, Fort Leavenworth, KS.

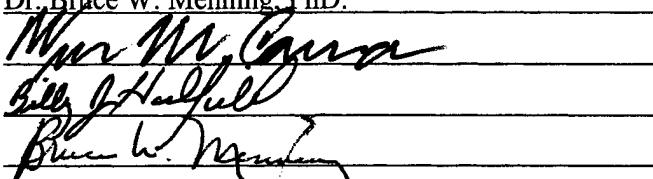
Sheridan, Stan R. Telephone interview with the author November 1999, Fort Leavenworth, KS.

United States Department of the Army, "Bradley Fighting Vehicle." White Paper, 1986.

_____. "Bradley Fighting Vehicle." White Paper, 1989.

United States Army Infantry School, "Holistic Review of Infantry." (DTIC N-17694.91).

CERTIFICATION FOR MMAS DISTRIBUTION STATEMENT

1. Certification Date: 2 June 2000
2. Thesis Author: Major Rod A. Coffey
3. Thesis Title: Doctrinal Orphan or Active Partner?: A History of U.S. Army Mechanized Infantry Doctrine. 163 pages.
4. Thesis Committee Members
Mr. William M. Connor, M.A.
LTC Billy J. Hadfield, M.B.A.
Dr. Bruce W. Menning, PhD.

Signatures:

5. Distribution Statement: See distribution statements A-X on reverse, then circle appropriate distribution statement letter code below:

A B C D E F X

SEE EXPLANATION OF CODES ON REVERSE

If your thesis does not fit into any of the above categories or is classified, you must coordinate with the classified section at CARL.

6. Justification: Justification is required for any distribution other than described in Distribution Statement A. All or part of a thesis may justify distribution limitation. See limitation justification statements 1-10 on reverse, then list, below, the statement(s) that applies (apply) to your thesis and corresponding chapters/sections and pages. Follow sample format shown below:

EXAMPLE

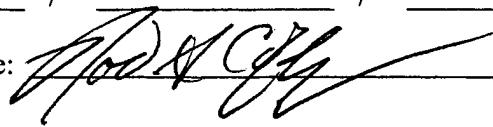
<u>Limitation Justification Statement</u>	/	<u>Chapter/Section</u>	/	<u>Page(s)</u>
	/		/	
	/		/	
	/		/	

Fill in limitation justification for your thesis below:

Limitation Justification Statement / Chapter/Section / Page(s)

_____	/	_____	/	_____
_____	/	_____	/	_____
_____	/	_____	/	_____
_____	/	_____	/	_____

7. MMAS Thesis Author's Signature:



STATEMENT A: Approved for public release; distribution is unlimited. (Documents with this statement may be made available or sold to the general public and foreign nationals).

STATEMENT B: Distribution authorized to U.S. Government agencies only (insert reason and date ON REVERSE OF THIS FORM). Currently used reasons for imposing this statement include the following:

1. Foreign Government Information. Protection of foreign information.
2. Proprietary Information. Protection of proprietary information not owned by the U.S. Government.
3. Critical Technology. Protection and control of critical technology including technical data with potential military application.
4. Test and Evaluation. Protection of test and evaluation of commercial production or military hardware.
5. Contractor Performance Evaluation. Protection of information involving contractor performance evaluation.
6. Premature Dissemination. Protection of information involving systems or hardware from premature dissemination.
7. Administrative/Operational Use. Protection of information restricted to official use or for administrative or operational purposes.
8. Software Documentation. Protection of software documentation - release only in accordance with the provisions of DoD Instruction 7930.2.
9. Specific Authority. Protection of information required by a specific authority.
10. Direct Military Support. To protect export-controlled technical data of such military significance that release for purposes other than direct support of DoD-approved activities may jeopardize a U.S. military advantage.

STATEMENT C: Distribution authorized to U.S. Government agencies and their contractors: (REASON AND DATE). Currently most used reasons are 1, 3, 7, 8, and 9 above.

STATEMENT D: Distribution authorized to DoD and U.S. DoD contractors only; (REASON AND DATE). Currently most reasons are 1, 3, 7, 8, and 9 above.

STATEMENT E: Distribution authorized to DoD only; (REASON AND DATE). Currently most used reasons are 1, 2, 3, 4, 5, 6, 7, 8, 9, and 10.

STATEMENT F: Further dissemination only as directed by (controlling DoD office and date), or higher DoD authority. Used when the DoD originator determines that information is subject to special dissemination limitation specified by paragraph 4-505, DoD 5200.1-R.

STATEMENT X: Distribution authorized to U.S. Government agencies and private individuals of enterprises eligible to obtain export-controlled technical data in accordance with DoD Directive 5230.25; (date). Controlling DoD office is (insert).